

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



81EXP



U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY

MAY 2 - 1966

CURRENT SERIAL RECORDS

VOL. 1

U.S. Department of Agriculture

1967 BUDGET

EXPLANATORY NOTES

AGRICULTURAL RESEARCH SERVICE
COOPERATIVE STATE RESEARCH SERVICE
EXTENSION SERVICE
FARMER COOPERATIVE SERVICE
SOIL CONSERVATION SERVICE

Project Statements

The obligations shown in the Project Statements are based on the appropriations and activities proposed in the 1967 Budget Estimates. In some Project Statements the activities are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

Amounts shown for these subcategories in the Project Statements are not always obtainable directly from accounting records formalized by specific account classifications. Wherever it has been necessary to distribute costs to activities for which total amounts are not directly available from the accounts, every effort has been made to base such charges as accurately as possible on available objective information such as periodic time reports, workload measurement systems, etc.

Statement of Available Funds and Man-Years

A statement is included for each agency, immediately following the introductory purpose statement, to itemize all sources of funds available to the agency and to show the related man-years for each source of funds.

These statements reflect the best available information at the time these Explanatory Notes were prepared (January 1966). An effort has been made to include the best possible estimate for the remainder of the fiscal year 1966 and for the fiscal year 1967. It is not possible, however, in many instances to determine in advance the extent to which agencies may be requested to perform additional services for other Federal and non-Federal organizations and individuals. Therefore, reimbursements and other funds received from sources other than appropriations directly to the agency may vary from those shown in the statements of available funds and man-years.

Amounts included in these statements for the most part reflect the amounts appropriated for each year. In some instances, prior year balances are also available for obligation during the year. Such amounts are not included in these statements but are shown in the justifications of the individual items.

In those cases where the funds are not appropriated (reimbursements, trust funds, transfers, revolving funds, etc.), the amounts shown represent obligations for the year.

In some instances there may be duplication of amounts shown. This results largely from cases involving reimbursements between appropriations within the same agency, or between different agencies within the Department, and where amounts are paid from appropriations to the Working Capital or other revolving fund. There is no duplication of the man-years shown.

Pay Rate Increase Costs

Public Law 89-301, approved October 29, 1965, providing pay increases for Federal employees effective at the beginning of the first pay period in October 1965.

The 1967 Explanatory Notes reflect the 1966 Supplemental Estimates proposed to meet their increased costs by including such amounts in the base upon which 1967 increases or decreases are computed. The 1967 Budget Estimates include amounts necessary to place this increase on a full-year basis in 1967.

In all cases, pay costs related to increases requested for fiscal year 1967 are included as a part of such increases and are not included in the cost figures shown below.

The following table summarizes both the 1966 supplemental request and those amounts included in the 1967 estimates:

(In thousands)

	<u>Total</u>	<u>Forest Service</u>	<u>Other USDA Agencies</u>
Total Pay costs for fiscal year 1966 from first pay period in October (under all funds)	\$23,432	\$4,680	\$18,752
Amounts to be absorbed:			
Within available funds	-7,527	-926	-6,601
By transfer (requiring Congressional approval)	<u>-64</u>	<u>- -</u>	<u>-64</u>
Total, 1966 Pay Cost Supplemental	<u>15,841</u>	<u>3,754</u>	<u>12,087</u>
(Included in base for 1967)			
Additional appropriations required for 1967:			
To place 1966 increases on a full-year basis .	5,889	1,265	4,624
To finance amounts absorbed in 1966 but which cannot be absorbed in 1967	<u>3,248</u>	<u>- -</u>	<u>3,248</u>
Total, Additional appropriations required in 1967	<u>9,137</u>	<u>1,265</u>	<u>7,872</u>

In order to find means for meeting increased costs, a thorough analysis of personnel and other requirements was undertaken in each agency of the Department. During the fiscal year 1966, it was possible to meet a substantial portion of the increased costs from available funds.

The increases requested for fiscal year 1967 for pay act costs include only those costs necessary to place on a full-year basis the supplemental proposed for 1966. In some cases where transfers of funds made in 1966 to cover these costs cannot be made in 1967, additional appropriations are being requested.

C O N T E N T S

(Volume 1)

	<u>Pages</u>
AGRICULTURAL RESEARCH SERVICE:	
Purpose Statement	1
Statement of Available Funds and Man-Years	2
Salaries and Expenses	7
Foreign Currency Authorization Program	145
Construction of Facilities	166
Animal Disease Laboratory Facilities	167
Working Capital Fund, Agricultural Research Center	168
Passenger Motor Vehicles and Aircraft	169
COOPERATIVE STATE RESEARCH SERVICE:	
Purpose Statement	173
Statement of Available Funds and Man-Years	174
Payments and Expenses	176
EXTENSION SERVICE:	
Purpose Statement	197
Statement of Available Funds and Man-Years	198
Cooperative Extension Work, Payments and Expenses	200
FARMER COOPERATIVE SERVICE:	
Purpose Statement	225
Statement of Available Funds and Man-Years	226
Salaries and Expenses	227
SOIL CONSERVATION SERVICE:	
Purpose Statement	233
Statement of Available Funds and Man-Years	235
Conservation Operations	237
Watershed Planning	261
Watershed Protection	269
Flood Prevention	309
Great Plains Conservation Program	335
Resource Conservation and Development	348
Water Conservation and Utilization Projects	361
Passenger Motor Vehicles	362

AGRICULTURAL RESEARCH SERVICE

Purpose Statement

194499

The Agricultural Research Service was established by the Secretary of Agriculture on November 2, 1953, under the authority of the Reorganization Act of 1949 (5 U.S.C. 133z-15), Reorganization Plan No. 2 of 1953, and other authorities. It conducts farm, utilization, marketing, and nutrition and consumer use research, plant and animal disease and pest control and eradication activities.

The program of the Agricultural Research Service is organized under two major areas of activity as follows:

1. Research is conducted under four major categories: (a) farm research (research on crops and livestock and their diseases and pests, soil and water conservation, and agricultural engineering); (b) utilization research and development; (c) nutrition and consumer use research; (d) marketing research.
2. Regulatory activities are conducted under three major categories: (a) plant disease and pest control; (b) animal disease and pest control; (c) pesticides regulation.

The Service carries out emergency programs, when necessary, for the control and eradication of animal diseases, such as foot-and-mouth disease, and for the control of emergency outbreaks of insects and diseases.

The Service directs research beneficial to the United States which can be advantageously conducted in foreign countries through agreements with foreign research institutions and universities. This program is carried out under the authority of sections 104(a) and (k) of Public Law 480, the Agricultural Trade Development and Assistance Act of 1954 as amended.

The Service maintains a central office in Washington, D.C., and operates the 10,378 acre Agricultural Research Center at Beltsville, Maryland. However, most of the Service's work is conducted at approximately 780 other locations in the United States, Puerto Rico, the Virgin Islands, and at several locations in foreign countries. Much of the work is conducted in cooperation with the State agricultural experiment stations, State Departments of Agriculture, and with other agencies, both public and private.



Available Funds and Man-Years
1965 and Estimated, 1966 and 1967

Item	Actual		Estimated		Estimated	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Agricultural Research Service:						
Salaries and Expenses:						
Appropriation	\$193,803,028:		\$201,506,000:		\$177,728,000:	
Transfer from)14,238:)15,430:)15,335:
Section 32 ...	11,775,000:		118,100,000:		25,000,000:	
Salaries and expenses (Special foreign currency program) ...	2,000,000:	18:	3,000,000:	19:a/	- -	19
Total	207,578,028:	14,256:	222,606,000:	15,449:	202,728,000:	15,354
Deduct allotments to other agencies	232,594:	3:	250,000:	6:	250,000:	6
Net	207,345,434:	14,253:	222,356,000:	15,443:	202,478,000:	15,348
Obligations under other USDA appropriations:						
Agricultural Stabilization and Conservation Service:						
Analyzing conservation materials at the fertilizer laboratory Beltsville, Maryland	18,000:	2:	- -	- -	- -	- -
Developing improved methods for storage and conditioning of CCC-owned and controlled grain	71,000:	6:	- -	- -	- -	- -

a/ In 1967, it is estimated that \$400,000 of prior appropriations will be used for the foreign research program. In addition, the Budget estimates propose authority to use foreign currencies directly, rather than through purchase with dollar appropriations, as follows: Guinea, 49,300,000 francs; India, 38,970,120 rupees; Israel, 17,775,000 pounds; Pakistan, 7,218,000 rupees; Poland, 97,824,000 zlotys; Tunisia, 104,200 dinars; U.A.R. (Egypt) 86,600 pounds and Yugoslavia, 4,375,000,000 dinars. The estimated dollar equivalent of these currencies, based on the September 30, 1965 exchange rate is \$23,788,000.

Item	Actual		Estimated		Estimated	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Obligations under						
other USDA appro-						
priations: (Cont.):						
Consumer and Mar-						
keting Service:						
Technical as-						
sistance on nut-						
rition problems:						
in the national:						
school lunch						
program	41,922:	5:	43,607:	4:	44,130:	4
Use of the						
Mobile, Ala.						
laboratory ...	1,230:	- -:	- -:	- -:	- -:	- -
Bacterial and						
insecticidal						
testing	816:	- -:	1,000:	- -:	1,000:	- -
Soil Conservation						
Service:						
Research on						
water yields						
and other con-						
servation pro-						
blems	15,858:	1:	13,897:	1:	12,787:	- -
Foreign research:						
and translation:						
programs under						
P.L. 480 for						
the other agen-						
cies of the De-						
partment, ex-						
cept Forest						
Service	10,135:	1:	9,823:	1:	9,923:	1
Construction of						
research faci-						
lities from						
funds authoriz-						
ed for transfer:						
from CCC in						
1964, to remain:						
available until:						
expended	910,862:	- -:	9,008,838:	- -:	- -:	- -
Miscellaneous						
activities ...	12,051:	1:	12,660:	1:	12,760:	2
Total, Other						
USDA Appro-						
priations ..	1,081,874:	16:	9,089,825:	7:	80,600:	7
Total, Agricultural:						
Appropriation Bill:	208,427,308:	14,269:	231,445,825:	15,450:	202,558,600:	15,355

(Continued on next page)

Item	Actual		Estimated		Estimated	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Working Capital						
Fund:						
Maintenance and operation of facilities and services at the Agricultural Research Center:						
For USDA agencies	4,074,364:	344:	4,294,700:	346:	4,323,300:	350
For other than USDA agencies	484,110:	41:	510,300:	41:	513,700:	42
Total, Working Capital Fund	4,558,474:	385:	4,805,000:	387:	4,837,000:	392
Other funds:						
Forest Service-- Share of dollar costs for carrying out foreign research and translating programs under P.L. 480	50,520:	4:	53,121:	4:	53,621:	3
Agency for International Development:						
Training of foreign participants	289,536:	21:	282,500:	16:	287,300:	17
Special projects:						
Technical consultation ...	135,578:	12:	174,800:	15:	177,600:	15
Major cereal crops in Asia	172,252:	4:	273,400:	9:	283,400:	10
Grain legumes in Africa ...	96,443:	3:	362,900:	12:	292,000:	14
Contagious bovine pleuropneumonia ...	98,520:	6:	100,150:	6:	100,700:	6
Tsetse fly control and eradication in Africa	161,120:	2:	236,750:	2:	185,700:	2

(Continued on next page)

Item	Actual		Estimated		Estimated	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Other funds:(Cont.):						
Agency for International Development: (Cont.)						
Research on the development of vegetable protein food technology for the developing countries	189,319:	10:	196,200:	13:	174,400:	13
Regional insect control	519,947:	21:	236,400:	10:	88,600:	5
Other special projects	130,312:	5:	86,500:	4:	102,200:	5
Total, Agency for International Development	1,793,027:	84:	1,949,600:	87:	1,691,900:	87
Funds appropriated to the President --Translation of publications and scientific co-operation	72,228:	- -:	57,803:	- -:	- -:	- -
Tennessee Valley Authority: Technical assistance in connection with losses through erosion of plant nutrients	- -:	- -:	3,300:	- -:	3,300:	- -
National Science Foundation: Research on rice blast fungus .	6,000:	1:	8,900:	1:	- -:	- -
International Agricultural Development Service--for personnel detail	20,127:	1:	- -:	- -:	- -:	- -
National Aeronautics and Space Administration--Research on remote sensing ...	- -:	- -:	361,500:	8:	457,000:	11

(Continued on next page)

Item	Actual 1965		Estimated Available 1966		Estimated 1967	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Other funds:(Cont.):						
California Depart-						
ment of Water Re-						
sources:						
Studies on ac-						
quatic weeds						
and on irriga-						
tion	60,344:	5:	72,000:	6:	55,000:	4
Georgia Highway						
Department:						
Research activi-						
ties on highway:						
erosion	25,000:	1:	25,000:	2:	25,000:	2
Office of Civil						
Defense, Depart-						
ment of Defense-						
Investigations of:						
processing and						
production of						
wheat wafers and						
development of						
food adjuncts to						
utilize basic						
shelter wheat						
ratios	54,378:	5:	48,290:	3:	46,173:	3
Department of						
State:						
Plant quarantine:						
inspection ser-						
vices, Austra-						
lia and New						
Zealand	11,490:	- -:	7,800:	- -:	7,800:	- -
Department of Com-						
merce-Area Rede-						
velopment Admin-						
istration, tech-						
nical assistance	1,561:	- -:	- -	- -:	- -	- -
Funds derived from:						
States, local or-						
granizations and						
others for:						
Inspection, cer-						
tification and						
quarantine of						
animal products:	32,296:	- -:	161,497:	- -:	40,000:	- -

(Continued on next page)

Item	Actual		Estimated		Estimated	
	1965		Available 1966		1967	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Other funds:(Cont.):	:	:	:	:	:	:
Funds derived from:	:	:	:	:	:	:
States, local or-	:	:	:	:	:	:
ganizations and	:	:	:	:	:	:
others for:(Cont.):	:	:	:	:	:	:
Feeding and at-	:	:	:	:	:	:
tending animals:	:	:	:	:	:	:
in quarantine.	68,225:	5:	77,874:	5:	60,000:	5
Research, plant	:	:	:	:	:	:
pest control,	:	:	:	:	:	:
and quarantine	:	:	:	:	:	:
services	1,082,772:	46:	1,643,276:	46:	1,806,519:	30
Technical services:	:	:	:	:	:	:
and research	:	:	:	:	:	:
principally for	:	:	:	:	:	:
Defense, Interior,	:	:	:	:	:	:
HEW, AEC, and AID:	1,769,306:	134:	1,863,295:	123:	1,415,022:	88
Import-export ser-	:	:	:	:	:	:
vices under plant:	:	:	:	:	:	:
and animal di-	:	:	:	:	:	:
sease and pest	:	:	:	:	:	:
control	1,102,293:	19:	1,019,832:	18:	1,009,646:	17
Miscellaneous	:	:	:	:	:	:
activities	45,719:	4:	77,809:	7:	66,469:	7
Total, Other	:	:	:	:	:	:
Funds	6,195,286:	309:	7,430,897:	310:	6,737,450:	257
Total, Agricultural:	:	:	:	:	:	:
Research Service	219,181,068:	14,963:	243,681,722:	16,147:	214,133,050:	16,004

Salaries and Expenses

Proposed change in project structure, 1967 Estimates

Present Structure (1966 Budget)		Proposed Structure
1. Research:	:	
(a) Farm Research	:	No change
(b) Utilization Research and Development	:	"
(c) Nutrition and consumer use research	:	"
(d) Marketing research	:	"
(e) Interdepartmental pesticides coordination	:	Coordination of departmental and interdepartmental activities related to pests and their control.
(f) Construction of research facilities	:	No change
(g) Contingency research fund	:	"
2. Plant and Animal Disease and Pest Control:	:	
(a) Plant disease and pest control	:	No change
(b) Animal disease and pest control:	:	"
(1) Animal disease control and eradication	:	(1) Animal disease prevention, control and eradication
(2) Animal inspection and quarantine	:	- -
- -	:	(2) Veterinary biologics regulation
(c) Pesticides regulation	:	No change

Explanation of Proposed Change

Under Research, the proposed change would describe more accurately pesticides coordination activities of the Department.

Under Plant and Animal Disease and Pest Control, the proposed revisions in project titles reflect recent organizational changes. The new project "Animal disease prevention, control and eradication" would consist of (1) all activities previously reported under "Animal disease control and eradication" and (2) the export-import inspection and quarantine activities previously reported under "Animal inspection and quarantine". The new project "Veterinary biologics regulation" would consist of activities relating to enforcement of the Virus-Serum-Toxin Act of 1913 previously reported under "Animal inspection and quarantine". By combining disease prevention, control and eradication work and by separating this work from the purely regulatory activities under the Virus-Serum-Toxin Act, this change is included to clarify the distribution of work under the overall project "Animal disease and pest control".

(a) Salaries and Expenses

	<u>Research</u>	<u>Plant and Animal Disease and Pest Control</u>	<u>Total</u>
Appropriation Act, 1966	\$123,622,500	\$74,299,500	\$197,922,000 a/
Transfer from Section 32 funds	18,100,000	--	18,100,000
Subtotal	<u>141,722,500</u>	<u>74,299,500</u>	<u>216,022,000 a/</u>
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental		-21,000	-21,000
Proposed supplemental for:			
Increased pay costs	1,985,900	1,215,100	3,201,000
Increased Wage board costs	416,600	53,400	470,000
Proposed transfer in the 1967 esti- mates to "Salaries and expenses, Statistical Reporting Service"	-66,000	--	-66,000
Base for 1967	<u>144,059,000</u>	<u>75,547,000</u>	<u>219,606,000</u>
Budget Estimate, 1967:			
Direct appropriation	107,980,000	69,748,000	177,728,000
Transfer from Section 32	25,000,000 b/	--	25,000,000
Total	<u>132,980,000</u>	<u>69,748,000</u>	<u>202,728,000</u>
Increase or decrease	<u>-11,079,000</u>	<u>-5,799,000</u>	<u>-16,878,000</u>

a/ Excludes reappropriation of \$2,000,000 of prior year funds for additional labor, subprofessional and minor scientific help in the field.

b/ The 1967 Budget Estimates propose the transfer of this amount from Section 32 funds to be merged with this appropriation.

SUMMARY OF INCREASES AND DECREASES

	<u>1966 Available</u>	<u>Increase or Decrease</u>		<u>1967 Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
Research:				
Program changes:				
Staffing and operating new and expanded research laboratories and watershed research centers	\$32,471,300	\$+215,200	\$+3,512,000	\$36,198,500
Research scheduled for phase out during 1966 (\$791,300); and nonrecurring operating costs of certain research proposed for closing prior to June 30, 1965, but for which it was necessary to incur costs in 1966 (\$159,700)	951,000	--	-951,000	--

(Continued on next page)

	1966 Available	Increase or Decrease		1967 Estimate
		Pay Costs	Other	
Termination or curtailment of miscellaneous low priority research projects in 1967	4,610,000	--	-4,610,000	--
<u>Facilities:</u>				
Increase for construction of initial facilities at Clay Center, Nebraska	--	--	+1,370,000	1,370,000
Livestock research facilities at Miles City Montana	--	--	+267,000	267,000
Decrease to eliminate non-recurring items provided in 1966	11,418,000	--	-11,418,000	--
All other	94,608,700	+535,800	--	95,144,500
Total research	144,059,000	+751,000	-11,830,000	132,980,000
<u>Plant and Animal Disease and Pest Control:</u>				
Expanded eradication activities for burrowing nematode	479,000	+4,500	+152,500	636,000
Plant quarantine:				
Strengthening inspection force	9,419,300	+88,700	+310,000	9,818,000
Overtime pay for Sunday work	--	--	+300,000	300,000
Strengthening animal inspection and quarantine activities ..	1,815,800	+11,400	+103,000	1,930,200
Expanded activities for equine piroplasmosis and salmonella under project "Diagnosis, control and eradication of miscellaneous diseases"	905,900	+4,500	+306,700	1,217,100
Increased registration and enforcement activities under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended	2,621,100	+19,100	+615,000	3,255,200
Preparation of plans for relocation of animal quarantine station at Clifton, New Jersey	--	--	+100,000	100,000
Elimination of non-recurring screwworm survey in Republic of Mexico	321,300	--	-321,300	--
Elimination or reduction of certain control and eradication activities:				
Elimination of imported fire ant program	3,303,000	--	-3,303,000	--

(Continued on next page)

	1966 <u>Available</u>	<u>Increase or Decrease</u>		1967 <u>Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
Elimination of soybean cyst nematode, phony peach and peach mosaic, and sweet- potato weevil programs ...	1,010,200	--	-1,010,200	--
Reduction of golden nema- tode, barberry, gypsy moth and witchweed programs ...	5,852,500	+25,800	-1,303,500	4,574,800
Reduction in brucellosis and scabies programs	22,591,300	+130,900	-2,186,400	20,535,800
All other	<u>27,227,600</u>	<u>+153,300</u>	<u>--</u>	<u>27,380,900</u>
 Total, Plant and Animal Disease and Pest Control..	 <u>75,547,000</u>	 <u>+438,200</u>	 <u>-6,237,200</u>	 <u>69,748,000</u>

PROJECT STATEMENT

Project	1965	1966 Estimated	Increase or Decrease		1967 (estimated)
			Pay Costs (P.L. 89-301)	Other	
1. Research:					
a. Farm research					
(1) Animal husbandry..	\$8,214,846:	\$8,562,500:	\$+38,100:	\$-277,800	\$8,322,800
(2) Animal disease and parasite.....	14,036,384:	13,991,700:	+52,700:	-150,500	13,893,900
(3) Crops.....	28,434,254:	30,044,700:	+172,100:	-1,520,200	28,696,600
(4) Entomology.....	16,926,093:	17,503,000:	+95,100:	-575,100	17,023,000
(5) Soil and water conservation.....	13,333,744:	15,043,100:	+94,800:	-96,300	15,041,600
(6) Agricultural engineering.....	5,069,163:	5,451,900:	+34,100:	-118,700	5,367,300
(7) Livestock survey..	24,945:	--	--	--	--
Total, Farm research:	a/86,039,429:	90,596,900:	+486,900:	-2,738,600	88,345,200
b. Utilization re- search and develop- ment:					
(1) Cereal and forage: crops.....	6,632,474:	6,710,600:	+40,400:	+19,000	6,770,000
(2) Cotton, wool and other fibers.....	5,721,877:	5,961,800:	+37,300:	+343,500	6,342,600
(3) Fruits and vegetables.....	4,338,887:	4,438,900:	+28,600:	+416,800	4,884,300
(4) Oilseeds.....	3,902,137:	3,835,900:	+27,500:	+112,500	3,975,900
(5) New and special plants	3,174,441:	2,685,900:	+16,400:	+394,800	3,097,100
(6) Poultry, dairy, and animal products..	6,126,309:	6,461,800:	+39,800:	+207,300	6,708,900
Total, Utilization research and devel- opment.....	a/29,896,125:	30,094,900:	+190,000:	+1,493,900	31,778,800
c. Nutrition and con- sumer use research:					
(1) Human nutrition..	2 422 778:	2,576,900:	+14,600:	--	2,591,500
(2) Consumer and food: economics.....	1,642,450:	1,620,100:	+12,700:	-250,000	1,382,800
(3) Clothing and housing.....	457,443:	308,300:	+2,500:	-26,300	284,500
Total, Nutrition and consumer use re- search.....	4,522,671:	4,505,300:	+29,800:	-276,300	4,258,800
d. Marketing research:					
(1) Market quality...	5,324,558:	5,856,000:	+29,500:	-259,100	5,626,400
(2) Transportation and facilities.....	2,301,420:	2,337,900:	+14,800:	-268,900	2,083,800
Total, Marketing research.....	7,625,978:	8,193,900:	+44,300:	-528,000	7,710,200

(Continued on next page)

Project			Increase or Decrease		1967 (estimated)
	1965	1966 (estimated)	Pay Costs (P.L. 89-301)	Other	
e. <u>Coordination of departmental and interdepartmental activities related to pests and their control</u>	247,594	250,000	--	--	250,000
f. <u>Construction of research facilities</u> ..	b/ 5,148,000	11,418,000	--	-9,781,000	1,637,000
g. <u>Contingency re-search fund</u>	--	1,000,000	--	--	1,000,000
Subtotal.....	133,479,797	146,059,000	+751,000	-11,830,000	134,980,000
Deduct reappropriation for Special Fund.....	-1,000,000	-2,000,000	--	--	-2,000,000
Total, Research.....	132,479,797	144,059,000	+751,000	-11,830,000	(1) 132,980,000
2. <u>Plant and animal disease and pest control:</u>					
a. <u>Plant disease and pest control:</u>					
(1) Plant pest control.....	17,751,751	21,676,500	+77,600	-5,464,200	16,289,900
(2) Plant quarantine.....	8,768,224	9,419,300	+88,700	+610,000	10,118,000
Total, plant disease and pest control....	26,519,975	31,095,800	+166,300	-4,854,200	26,407,900
b. <u>Animal disease and pest control:</u>					
(1) Animal disease prevention control and eradication:					
Program	37,305,748	40,245,300	+243,300	-2,098,000	38,390,600
Construction of facilities.....	--	--	--	+100,000	100,000
Total, animal disease prevention, control and eradication..	37,305,748	40,245,300	+243,300	-1,998,000	38,490,600
(2) Veterinary biologics regulation.....	1,502,792	1,584,800	+9,500	--	1,594,300
Total, Animal disease and pest control....	38,808,540	41,830,100	+252,800	-1,998,000	40,084,900
c. <u>Pesticides regulation:</u>					
(1) Program.....	2,469,551	2,621,100	+19,100	+615,000	3,255,200
(2) Construction of facilities.....	60,900	--	--	--	--
Total, Pesticides regulation.....	2,530,451	2,621,100	+19,100	+615,000	3,255,200

(Continued on next page)

Project	1965	1966 (estimated)	Increase or Decrease		1967 (estimated)
			Pay Costs (P.L. 89-301)	Other	
Total, Plant and animal disease and pest control.....	67,858,966	75,547,000	+438,200	-6,237,200(2)	69,748,000
Unobligated balance..	5,239,265				
Total increased pay costs (P.L. 89-301) and wage board increases.....	(--)	(3,894,400)	(+1,190,800)	(-56,200)	(5,029,000)
Total available or estimate.....	205,578,028	219,606,000	+1,189,200	-18,067,200	202,728,000

a/ The 1965 amount includes the supplemental appropriation of \$100,000 (\$98,800 for farm research and \$1,200 for utilization research and development) made in 1965 for the Appalachian program. Of this amount, \$7,800 was obligated in 1965 and \$92,200 in 1966.

b/ Represent amounts appropriated to remain available until expended.

INCREASES AND DECREASES

Research

(1) A net decrease of \$11,079,000 for research, consisting of:

(a) An increase of \$3,512,000 for staffing and operating new and expanded farm research laboratories and watershed research centers authorized by Congress (1966 available, \$32,471,300)

It is urgent that new laboratories and other facilities which Congress has authorized be fully staffed as rapidly as possible in order to take advantage of their research potential, and to provide for initial staffing and research planning for facilities which will be under construction or nearing completion of construction. The amounts required are shown in the accompanying table.

The proposed increase would be distributed by projects as follows:

<u>Project</u>	<u>Amount</u>
Farm research:	
Animal husbandry	\$301,200
Animal disease and parasite	50,500
Crops	243,700
Entomology	25,600
Soil and water conservation	668,800
Agricultural engineering	25,300
Subtotal, Farm research	1,315,100
Utilization research	2,196,900
Total increase	<u>3,512,000</u>

The increase would be used as follows:

1. Soil and water conservation research laboratories and watershed research centers - \$668,800.

Iwin Falls, Idaho - \$139,000 (1966 available, \$651,900)

Research at this location involves a search for necessary new technology for sound, effective and efficient soil and water conservation and management practices, methods and equipment for the Snake River Plains and associated resources areas, extending from Wyoming across southern Idaho, northern Utah and Nevada into central Oregon. This increase would provide complete funding as recommended in Senate Document 59, 86th Congress. Funds would be used for additional professional and support personnel and essential instrumentation required in the new facility.

Beltsville, Maryland (Hydrograph Laboratory) - \$67,000 (1966 available, \$280,900)

The objectives of this laboratory are to evolve and test mathematical

models explaining the governing principles of runoff hydrographs. The proposed increase would provide for two professional and three supporting personnel necessary to accelerate the rate at which these new principles may be developed and to speed up the release and use of data necessary for the rapidly expanding watershed improvement program. This increase would complete funding as recommended in Senate Document 59.

Columbia, Missouri - \$80,000 (1966 available, \$295,500)

Research at this location consists of the development of basic information on the precipitation runoff relationships, sedimentation, and channel stability problems that occur under the intensively developed agricultural areas of the North Central States; also, to gain fundamental knowledge on the causes, control, and prevention of severe gully formation as it relates to sedimentation and watershed protection. The proposed increase would complete funding as recommended in Senate Document 59.

Sidney, Montana - \$175,200 (1966 available, \$184,500)

Research at this recently occupied new facility consists of basic and applied research on wind, water, and erosion control and moisture conservation practices. This research is urgently needed for efficient farming and ranching on the Joplin and associated soils in the Northern Plains and particularly in the States of Montana and Wyoming. This laboratory was occupied in December 1964. The proposed increase would provide for complete staffing and initial equipping of the new facility as recommended in Senate Document 59.

Mandan, North Dakota - \$102,100 (1966 available, \$351,300)

The existing research program is concerned with developing improved practices for efficient utilization of soil and water resources for forage and other crop production on the extensive crop and range lands of the Williams-Morton-Bainessville soils of the Northern Great Plains. This proposed increase is needed for further development of the expanded soil and water research program which will permit utilization of the additional facilities scheduled for completion in the spring of 1966. Additional funds will be required in future years to complete funding as recommended in Senate Document 59.

Florence, South Carolina - \$105,500 (1966 available, \$243,700)

The Middle and Upper Coastal Plain area constitutes one of the most challenging areas for agricultural development in the Southeast. The laboratory-office building has recently been completed at Florence. It is in the heart of this 30-million acre region in Georgia, South Carolina, and North Carolina. Present and future agricultural production in this area is dependent upon early solution of basic soil management problems which include excessive soil crusting and compaction, increasingly serious water and wind erosion

problems, and new problems of balancing fertility practices against new production practices. Of equal importance is the solution of problems to control excess water on croplands and to develop practices that will effectively conserve water and spring moisture supplies to meet periods of moisture deficiency during the growing season. New techniques for developing quality water supplies from streams, ponds, and shallow aquifers are needed to develop a more effective agricultural program in this area. The increase would provide for remaining urgently needed professional and support personnel and complete funding as recommended in Senate Document 59.

2. Other farm and marketing research facilities - \$646,300

Clay Center, Nebraska (meat animal research) - \$301,200
(1966 available, \$200,600)

Improvements in livestock husbandry have lagged behind those in crop production. Livestock husbandry research support has also lagged behind that for crop production. The closing of this technology gap is essential to continued gains in efficiency of the agricultural industry. All of the hay and approximately 60% of the feed grains reach the consumer through consumption by livestock and production of livestock products. Furthermore, livestock products make up 66% of the farm value of the average consumer's "market basket." Thus, expanded research on cost reductions in livestock husbandry is important to both the producer and the consumer of animal products.

Additional research is needed particularly on meat animals in order to improve reproductive rates, efficiency of feed conversion and carcass quality. The reproduction rate in cattle, sheep and swine is low and has not changed materially in many years. Meat animals receive more and better feed, but the efficiency of feed conversion has not been materially improved. In addition, particularly in swine but also in beef cattle and sheep, there is need for research on meat-type animals carrying less fat and yielding meat that more nearly meets consumer preferences.

The establishment of a meat animal research center to carry out the studies needed in this field has been made possible through recent assignment of 10,236 acres of land at Clay Center, Nebraska. This land is located in the very heart of the most concentrated area of the United States for grain and meat animal production. The 1966 appropriation provides for the initial alteration and development of the land for research use. The transfer of an additional 25,000 acres adjacent to the original site is anticipated within the next fiscal year. The development and alteration of this land for experimental use is necessary while the main center facilities are being constructed.

In the fiscal year 1966, the funds available are being used to develop the available land resources to the extent possible, to make seedings, to develop required fencing, to acquire necessary materials and equipment, to construct temporary animal housing, to initiate some research work with cattle, and to prepare for work with sheep in the early part of fiscal year 1967. Five professional and 5 supporting personnel will be employed.

In fiscal year 1967, land leveling and irrigation and road, water, and fencing development on the initial increment of land would be completed. The developmental work would be extended to the additional land. Outlying animal shelters, collecting pens, fences, roads, etc., would be developed. Crops needed for the animal investigational work would be developed. The beginning research projects with cattle and sheep would be enlarged and new areas of work initiated. Four professional and 14 supporting personnel would be added to the staff, and needed farm and related equipment would be acquired.

College Station, Texas (control of livestock insects and toxicological and pathological effects of pesticides on livestock) - \$101,400 (1966 available, \$156,900)

The new research facilities for this research at College Station should be completed by December 1968. It is important to plan for prompt use of facilities and to have a director and key personnel available for the development and equipping of complex technical laboratories and to plan the research to be undertaken in the new facilities. This research planning would include:

Basic and supplied research on flies, ticks, mites, etc, attacking all classes of livestock and poultry. Basic research would be directed especially toward biology of livestock pests and the mode of action of insecticides and their effects on insect tissues, cells, and enzyme systems, and complementing research on toxicological and pathological effects on livestock. Applied research would emphasize safe, non-residue forming insecticides, non-insecticidal methods of insect control, including attractants, repellents, chemosterilants and biological control agents.

Toxicological and pathological effects of pesticides on livestock. The continuing development of insecticides, chemosterilants, herbicides, and other chemicals for widespread use in improved control of livestock and plant pests requires increased study of their harmful effects on the quality of meat, milk, and eggs. Investigations would cover the acute and chronic toxic effects on fundamental cellular processes, such as enzymes; on interferences with reproduction such as production of abnormal offspring; and on other systemic disturbances such as hormone balance. Improved techniques need to be developed to remove the hazards of the use of these pesticides and chemicals and to provide antidotal procedures for treatment if needed. Residues must be determined in meat, milk, and eggs.

The agricultural engineering research at the laboratory would be largely of a basic nature and much of it would be concerned with the application of engineering and physical science to development of engineering criteria for the equipment and procedures for applying pesticides to attain maximum control with minimum residues, to study effects of feed and manure handling methods on insect populations, and to make field tests of laboratory-developed control procedures.

College Station, Texas (Cotton Disease Laboratory) - \$40,700 (1966 available, \$31,400)

These funds would provide for initial staffing of the cotton disease

laboratory, which should be completed by February 1968. With this initial staffing, a start would be made on the complex program to solve the disease problems responsible for major losses to the American cotton producer. These complex problems involve boll rots, seedling diseases, Verticillium wilt, bacterial blight, cotton root rot, fusarium wilt, and many complications of other diseases, all contributing to cotton losses which result in higher cost of production.

The increase would provide for two scientists and supporting staff to plan development and equipping of the complex technical laboratories and the initial phases of research operations. The funds would provide for some specialized laboratory equipment which could be used in initial research.

National Arboretum, Washington, D.C. - \$203,000 (1966 available, \$688,700)

With the new building and greenhouse at the National Arboretum completed, additional funds are needed to attain an effective level of research and operation. The National Arboretum serves industry and the horticulturally-minded millions of suburban and urban populations in investigating critical aspects of the identification, production, evaluation and culture of woody plants, and in educating the public with respect to their use. To perform this dual function of research and education effectively through the exhibition and display of living collections, additional funds are needed for both the efficient utilization of existing facilities and for further development of living plant collections. The increase would provide staffing and operating funds for the new facilities and contribute to the maintenance of the Arboretum collections of trees and shrubs. The current research program would be expanded in plant identification and breeding, with particular emphasis in the critical area involving the discovery, production, and evaluation of new shade trees for street and highway use.

Utilization research and development facilities - \$2,196,900

Albany, California - \$387,700 (Total available in 1966, including Puyallup, Washington, and Pasadena, California, \$6,713,200)

The new laboratory facilities at Albany are expected to be completed in June 1967. Increased funds will be required for initial staffing of key personnel and for new equipment.

Additional funds would be required for complete staffing and equipment in future years. The new research to be initiated would cover the following lines of work:

- a. Basic and developmental research on problems in the food and feed uses of cereals - \$337,200 (1966 available, \$971,600)

Role of wheat starch in flour maturing and baking properties.
The arbitrary prohibition against chemical agents for maturing wheat flour to be used or produced in Europe seriously hampers efforts to increase the important dollar market export sales of U. S. hard red winter wheats. Current work to develop acceptable new maturing methods has shown that the interactions of wheat starch with certain protein and lipid components in flour are important factors affecting the response to maturing treatments and the baking properties of flours.

New wheat foods. To take full advantage of all possible ways to increase commercial exports of wheat, new types of wheat foods are needed for world areas where conventional wheat products do not fit with prevailing dietary patterns. New products are needed to bridge the gap between bulgur and the high protein, milk-like or meat-like products from wheat currently under development. Simple enzymatic processes should be devised to convert whole wheat or low-cost wheat fractions to nutritionally enhance products designed to meet specific flavor, texture, or other dietary preferences of various population groups.

Mill feeds. Nearly 30% of the wheat kernel now is sold at depressed prices as millfeed fractions for use in mixed feeds. This material could bring more return to the grower and miller if it were available in the form of products of known composition and nutritional value which could be incorporated in feed formulations as determined by modern computer linear programming methods. Research is urgently needed to develop methods of further processing millfeed fractions to yield uniform products whose composition and nutritional values are known.

- b. Research on production of new safflower meal products with high nutritional value - \$50,500 (1966 available, \$76,400)

Safflower is a promising cash replacement crop in the western U. S. Between 1957 and 1963 the acreage devoted to safflower expanded five-fold, and continued expansion is predicted. Almost half of the crop is exported to Japan. Returns from the crop are mainly dependent on oil markets. Although there

is an increasing demand for high-protein feeds in the West, as well as a pressing worldwide need for protein, safflower meal is now marketed as a low-cost animal feed because of its high fiber content. Preliminary research has shown that dry separation procedures will reduce safflower meal fiber to acceptable levels, and that edible products containing 70% protein can be made by an inexpensive extraction procedure. Practical processes are needed for producing low-fiber, high-protein material from safflower which could satisfy nutrient availability and high energy requirements.

Olustee, Florida - \$253,900 (Total available in 1966, \$352,700)

The new naval stores research facilities at Olustee are to be completed in September 1966. To make effective use of these facilities, additional funds are needed for staffing and for new equipment to undertake additional research on new and expanded outlets for pine gum products. Pine gum is an important cash crop for thousands of farmers and processors in the Southeastern part of the United States. The income received by the farmer from this crop depends on the market values of the turpentine and rosin derived from it. Pine gum rosin stocks have continued to increase for the past few years and are considerably in excess of a full year's production. The urgency of this situation was stressed at a recent conference where industry leaders emphasized that the pine gum naval stores industry would be unable to survive unless research could develop products to reverse these trends.

New outlets for pine gum rosin that would be sought in the new research include polyurethane foam-type polymers from rosin, epoxy resins, and other condensation polymers that could find profitable large-volume markets in the plastics field. Other expanded research would emphasize rosin-derived intermediates for making various other types of polymers. Such investigations would exploit recent and promising advances in transforming rosin into attractive di-functional intermediates. The expanded research also would include determination of the unidentified components of rosin to provide new pine gum chemicals on which to build industrial derivatives.

Winter Haven, Florida - \$202,900 (Total available in 1966, \$520,200)

In 1958, new facilities for fruit and vegetable research were occupied at Winter Haven, Florida, but the laboratory has never been funded for full utilization of its research potential. Additional research is needed to protect and expand citrus markets threatened by new low-cost artificial products. Development of improved citrus frozen concentrates, new dehydrated products, and other new processed products would: (a) offset the decreasing per capita consumption of citrus, (b) expand consumption to cope with the increasing production of citrus, and (c) provide for competing more successfully with artificial or synthetic products which are invading the natural products market. Recently introduced synthetic powder and frozen products are receiving repeated consumer buying. It has been estimated that these artificial products soared from 8 to 18% of the market during the short period of June to March 1965, entirely as a result of the introduction of one new improved product.

Better citrus products, as well as new types of such products, improvement of current processing methods, and new processing procedures, offer opportunities to maintain reasonable returns to the citrus farmer through the development of economically attractive orange and grapefruit products for both domestic and foreign markets. Research would be initiated or expanded with increased funds to develop new or improved citrus products and processes. Research would be initiated on enzyme systems important to flavor, aroma, texture, and stability of citrus products. Current research would be expanded on orange essential oils to improve flavor, on grapefruit products to minimize bitterness; and on lipid composition of citrus juice to limit off-flavor development during storage.

Athens, Georgia - \$25,000 (No funds available in 1966)

It is expected that the new Southeastern Utilization Research and Development Laboratory at Athens will be completed about the middle of the fiscal year 1968. In order to make use of the new facilities, it will be necessary to proceed in fiscal year 1967 with appointment of the director and other key personnel to plan the research program, recruit personnel, proceed with plans for purchase of equipment, and to develop working relationships with Federal and State agencies and with agricultural and industry groups. The director, plant manager, business manager, and some clerical support would be on the rolls by the close of fiscal year 1967, averaging about 2 man-years.

In Senate Document 34, 88th Congress, the Department outlined plans for the research program to be conducted at the Southeastern Laboratory. These plans have been modified somewhat by interim developments. Currently, plans are to undertake expanded research in the following areas by initiation of programs at the Southeastern Laboratory: poultry, eggs, meat, fruits, vegetables, forages, feeds, and oilseeds (cottonseed, peanuts, and soybeans).

Peoria, Illinois - \$365,700 (Total available in 1966, \$7,075,900)

The new laboratory facilities at Peoria are expected to be completed in December 1967. Increased funds will be required for initial staffing of key personnel and for new equipment. Additional funds would be required for complete staffing and equipping in future years. The new research to be initiated would cover the following lines of work:

a. Research to discover and develop new uses for cereal grains - \$304,900 (1966 available, \$4,726,300)

Markets for cereal grains can be expanded with advantage to the grower, processor, and consumer through chemical, physical, and other modifications of cereal grains and cereal constituents (such as starches, flours, etc.) to make new and improved industrial products. New and broadened research to be undertaken to achieve these objectives include: (a) explanatory studies on the development of new cereal starch and flour and flour derivatives and their evaluation for the improvement of paper and paper products as a basis for the increased industrial use of cereal grains in the expanding

paper and paper products market; and (b) evaluation of graft copolymers of starch and vinyl-type monomers for industrial use as emulsifiers, thickening agents, protective coatings, adhesives, and plastic compositions, which would lead to industrial uses not now met by agricultural products.

- b. Research to develop new industrial products from crambe - \$60,800
(1966 available, \$179,000)

One of the most promising new crops being developed in this country is crambe. The research done to date on this new crop, which up to now is of a preliminary evaluation type, indicates considerable potential for industrial uses not presently met by domestic oilseeds. Extensive research should be undertaken to develop the full potential of this new crop by conducting chemical composition, modification, and processing studies leading to specific industrial uses.

New Orleans, Louisiana - \$343,500 (Total available in 1966, including Natick, Massachusetts, \$6,551,400)

The new research facilities at New Orleans will be completed in March 1967. In order to make use of these facilities, additional funds are needed for initial staffing and new equipment. The new facilities and funds requested would provide for research to be initiated as follows:

Research to develop new and improved cotton products as a means of broadening cotton markets - \$343,500 (1966 available, \$4,632,200).

The cotton industry strongly urges increased emphasis on the improvement of the abrasion resistance of 100% cotton durably-creased products. Cotton is losing a major share of its important apparel markets due to the new delayed-cure durable-crease finish now sweeping the garment industry. The advent of delayed curing has led to the application of high levels of crosslinking agents resulting in a substantial decrease in the wear and abrasion resistance of all-cotton wash-wear fabrics. The textile industry is resorting to blends of synthetics with cotton (usually containing 50% or more of polyester) to minimize the abrasion problem. Available statistics reflect a decline in the use of cotton in the apparel market, and further losses are anticipated.

Expanded research is needed to exploit promptly several recently discovered bench-scale finishing processes and fabric construction findings by developing techniques that can be applied readily on a commercial scale to produce satisfactory all-cotton durably-creased products. New and expanded research is needed in related areas to improve strength, abrasion resistance, and elasticity of cotton products. Specific research investigations include preferential regional crosslinking formation of elastic polymeric materials, preferential shrinkage treatment, wet-processing equipment based on new concepts for chemically treating cotton fabrics, use of blends of chemically treated and untreated cotton fibers, and investigation of free radical reaction mechanism to develop high strength products.

Weslaco, Texas - \$216,300 (Total available in 1966, \$232,500).

The new laboratory for research on utilization of fruits and vegetables at Weslaco is to be completed in September 1966. In order to develop new and improved products to improve agriculture in the Rio Grande Valley and to form the basis for an expanded industry, additional funds are needed for staffing and for new equipment to undertake new research.

The principal expanded work would be directed toward fruit and vegetable products, specifically with the view toward the development of processing methodology applicable to relatively small-scale operations which would particularly benefit small communities in these areas as well as the entire nation. Severe freezes in 1949, 1951, and 1961 have discouraged replanting by grapefruit producers, especially in the Rio Grande Valley, since young trees require eight to ten years to reach maximum productivity. Substitution of annual crops for a portion of the citrus trees would reduce the extent of financial loss from future freezes and improve the economic stability of the region. In addition, citrus growers are facing increasing competition from the recently introduced synthetic powders and frozen products.

Research would be expanded substantially on the development of new and improved processed products from southern-grown vegetables in cooperation with other Federal, State and industry groups. A part of this would be basic research on pectic substances of vegetables to insure development of highly acceptable processed products.

A portion of the increase would be used for citrus research to develop products from unusual varieties of citrus which exhibit resistance to freeze damage, and to develop whole fruit citrus drinks.

Wyndmoor, Pennsylvania - \$401,900 Total available in 1966, including Beltsville, Maryland, and Washington, D.C., \$7,940,000).

The new laboratory facilities at Wyndmoor are expected to be completed in February 1967. Increased funds will be required for initial staffing of key personnel and for new equipment. Additional funds would be required for complete staffing and equipping in future years. The new research to be initiated would cover the following lines of work:

- a. Basic and applied research necessary for the creation of new, and improvement of existing, meat products (\$201,100) (1966 available, \$936,200).

New dehydrated meat products - Dried meat products have economic advantages over conventional meat products in packaging, handling, and storage costs. Quality of dried meats needs to be improved, however, to maintain the competitive position of these products. Various approaches have been tried but processes that give good

quality products continue to be uneconomical for substantial usage. Primary emphasis would be placed on adaptation to dried meat products of the newly developed explosion-puff drying process which commercially produces fruit and vegetable products of superior texture and flavor. Other dehydration methods would be explored.

- b. Research on the chemical composition of tobacco leaf and smoke to develop information that would help the tobacco segment of American agriculture retain its market (\$200,800) (1966 available for tobacco, \$1,654,200).

It is extremely important to preserve the tobacco segment of American agriculture. The value of the tobacco crop in the United States for calendar year 1964 was \$1.3 billion. The Federal and State tax revenue from tobacco for 1965 amounted to approximately \$3.5 billion. Additional research is needed to expand the chemical substances in tobacco leaf and cigarette smoke that may have physiological effects. By learning more about tobacco composition, more effective studies to limit or reduce undesirable substances can be undertaken. Research would be expanded to develop and apply still more refined analytical methods. Emphasis would be given to: (a) the detailed composition of polar substances in tobacco leaf; (b) the study of hitherto unreported neutral and acidic substances in leaf and cigarette smoke; and (c) the distribution of volatile constituents between the particles and the vapor in cigarette smoke.

- (b) A decrease of \$951,000 covering research scheduled for phase out in 1966 (\$791,300) and nonrecurring operating costs of certain research proposed for closing prior to June 30, 1965, but for which it was necessary to incur costs in 1966 (\$159,700)

- (1) Research scheduled for phase out in 1966 (\$791,300).

The 1966 budget estimates proposed the elimination of research projects totaling \$5,151,000. Several of these projects were continued on the basis that they would be phased out by the end of the fiscal year 1966 as set forth in the Congressional Record of April 27, 1965, pp. 8254-8256.

Therefore, funds for these projects have been deleted in the budget for 1967. The amounts shown in the following tabulation include increased pay costs during 1966 pursuant to Public Law 89-103.

Farm Research

Fur animal research (Petersburg, Alaska; Madison, Wisconsin; and Beltsville, Maryland).....	\$78,200
Research under cooperative agreements (13) on dairy cattle, beef cattle, and swine husbandary in 11 States (California, Illinois, Indiana, Michigan, Minnesota, Nevada, North Carolina, South Dakota, Texas, Va., Wisconsin...	104,000

Farm Research (Cont'd.)

Poultry husbandry research (Glendale, Arizona)	60,900
Beef cattle husbandry and irrigated soil management research, (Newell, South Dakota)	167,800
Research on soil management under irrigation (Huntly, Montana -- \$22,600, and Mitchell, Nebraska -- \$58,800)	81,400
Research on sesame (College Station, Texas)	30,300
Research on rye (Tifton, Georgia; Beltsville, Maryland; and Stillwater, Oklahoma)	40,100
Food wholesaling and retailing research branch	<u>228,600</u>
Total	<u>791,300</u>

- (2) Nonrecurring operating costs of certain research proposed for closing prior to June 30, 1965, but for which it was necessary to incur costs in 1966 (\$159,700).

The 1966 budget estimates proposed the closing of a number of research stations and lines of work by July 1, 1965. However, it was not possible to actually close this work by that date. Costs totaling \$159,700 were incurred in 1966 in connection with the liquidation of these projects. The 1967 budget estimates do not include these nonrecurring costs incurred in 1966, as follows:

Farm Research

Poultry husbandry research at Fontana, California	\$2,400
Crops research on fiber plants, bamboo, sesame, and castorbeans	34,100
Soil and water conservation research at Beltsville, Maryland; and Morgantown, West Virginia	20,500
Agricultural engineering research on castorbeans	<u>2,800</u>
Total, Farm Research	59,800

Utilization Research and Development

Elimination of utilization research on sugarcane at Houma, Louisiana; tung at New Orleans, Louisiana; and reduction of research on new crops at New Orleans, Louisiana	10,000
Elimination of utilization research on honey and maple, and reduction of research on new crops at Philadelphia, Pennsylvania	22,600
Elimination of utilization research on sugarbeets and reduction of research on new crops at Albany, California; and elimination of research on fruits and vegetables at Prosser, Washington	<u>41,000</u>
Total, Utilization Research and Development	73,600

Nutrition and Consumer Use Research

Elimination of research on housing and equipment at Hyattsville, Maryland	<u>26,300</u>
Total	<u>159,700</u>

(c) A decrease of \$4,610,000 to terminate or curtail miscellaneous research projects of lower priority, in order to provide for urgent needs.

In view of the urgency of meeting higher priority needs in other programs, including the staffing of new laboratories and watershed research centers, it is necessary to curtail or eliminate a number of miscellaneous lines of research. These decreases consist of the elimination or curtailment of lower priority research, including work which will be substantially completed by the beginning of the fiscal year 1967.

The distribution of the decrease by activity is as follows:

Farm Research

Animal husbandry	\$323,300
Animal disease and parasite	201,000
Crops	1,693,400
Entomology	566,700
Soil and water conservation	505,600
Agricultural engineering	<u>141,200</u>
Subtotal	3,431,200
<u>Utilization Research and Development</u>	629,400
<u>Nutrition and Consumer Use Research</u>	250,000
<u>Marketing Research</u>	<u>299,400</u>
Total decrease	<u><u>4,610,000</u></u>

- (d) Construction of initial facilities at U.S. Meat Animal Research Center, Clay City, Nebraska - \$1,370,000

There is a critical need to expand research on meat animal production in order that producers of livestock may increase the efficiency of cattle reproduction, the use of feed in producing meat and the production of lean meat with less fat. Improvements in the efficiency of production of meat animals have not been commensurate with those of poultry and dairy cattle or the production of most crops, especially feed grains.

A large amount of land is needed for such an installation for carrying an adequate number of animals. The availability of surplus Federal land at Clay Center, Nebraska, offered a rare opportunity to the Department to establish the facilities not only at a central location for an efficient program but in the Midwest which is the largest region of livestock and livestock feed production. Research there would have application to both range and farm types of production in the Corn Belt. Research findings would bring about important increases in returns to producers of the region and provide larger local markets for feed grains. Mainly, results of the research would be expected to have general National application.

At Clay Center, Nebraska, 10,236 acres of prime farm land, has been provided to the Department and the transfer of an additional 25,000 acres is anticipated. This land and the facilities requested would provide for the care of an adequate number of experimental animals for studies of breeding, physiology, nutrition, and housing and management; for the production of pasture and range research; and for the producing of experimental crops. The site is in the center of a heavy concentration of beef cattle and sheep with potentials for research and application both to range and farm types of production. The location is also in the corn growing area of the Midwest and is very well suited for swine production.

Much attention at the research center would be given to genetic improvement in large animals similar to that achieved in poultry and crops through use of large numbers of genetic units. Approximately 5,000 beef cows would be used for evaluation of hybrid vigor in systematic crossings of inbred lines, selection for improved efficiency and carcass quality, cross breeding, evaluation of new breeds, and related basic research to support these investigations.

Selection for consumer preferred lamb would be undertaken on a large scale with approximately 10,000 sheep. This would include evaluation of sheep breeds and their crosses and semen preservation.

The swine genetics program involving about 3,500 head of swine, including young stock, would seek to extend present knowledge of the physiological, biochemical and nutritional consequences of genetic change. Special attention would be given to breaking the barrier on litter size, basic understanding of genetic differences and introduction and testing of foreign stocks. With all three types of meat animals, special emphasis would be given to physiological investigations on increased reproductive efficiency in order to obtain more calves, lambs, and pigs per breeding unit. This effort would involve basic research on both male and female germ plasm including collection, maintenance, manipulation and utilization.

Since the Midwest is the largest region of livestock and livestock feed production, research on improvement of meat animal husbandry in that locality can bring about immediate, important increases in returns to producers. The Center would also provide an institution where farmers can see

animal facilities, feeding and management practices, and the advantages to be gained by good animal husbandry programs. The work would be conducted in cooperation with the Nebraska Agricultural Experiment Station and with experiment stations located in other States.

The construction of these facilities would enable the Department to transfer the beef cattle research presently being conducted at Fort Robinson, Nebraska.

The construction funds requested would provide general office-laboratory space and utilities for the scientists. This is only the first increment of a larger complex and additional construction of beef cattle, sheep, and swine housing, shelters and corrals; and other specialized facilities would be required in future years to meet the total needs in terms of land area and livestock population planned for this center.

Proposed Facilities--The increase of \$1,370,000 would provide a laboratory-office building (39,000 sq. ft.) and utilities as follows:

Laboratory-office building	\$1,200,000
Utilities, etc.	170,000
Total	<u>1,370,000</u>

Additional funds will be required in future years to complete the development of this Center.

(e) Facilities for range beef cattle research at the U. S. Range Livestock Station, Miles City, Montana - \$267,000

Facilities are urgently needed for beef cattle research at this Station, which is concentrated on problems applicable to the High Plains range conditions of the West, and includes management, feeding, and reproduction aspects as well as breeding. The research has pioneered development of strains of improved, more rapid growing beef cattle and of performance testing of cattle. In order to provide much needed information basic to decreasing reproductive losses and reducing costs of operations under Northern Plains conditions, research must be continued on such problems as the efficiency of artificial insemination under range conditions, control of the estrus cycle, and grazing in relation to species of forage, fertilizer practices, and supplemental feeding.

The present beef cattle research facilities at Miles City, Montana, were acquired from the Department of the Army in 1924. Most of the existing buildings and other facilities were acquired at the time of the transfer, and some are now nearly 90 years old. New facilities are badly needed to place range beef cattle research on a more productive basis commensurate with industry needs.

The present office is a converted old frame barracks and a temporary physiology laboratory is located in one end of a barn. A new structure of fireproof construction is urgently needed as a replacement. At least

one new residence is needed to replace the very old residence that burned to the ground recently. It would provide satisfactory living quarters for the Superintendent who is required to live on the Station.

Proposed Facilities--The 1966 Appropriation Act included \$40,000 to plan for a facility replacement program and for improvements at Miles City, Montana. The increase of \$267,000 would provide for construction of a new office-laboratory building (8,500 sq. ft.) and one residence (1,200 sq. ft.). This proposed replacement of buildings would not provide for an expansion in the research program. The construction would be distributed as follows:

Office-Laboratory building	\$246,000
Residence	<u>21,000</u>
Total	<u>267,000</u>

The \$267,000 increase would provide for the major portion of the construction identified by Congress when they appropriated planning funds for this Station.

(F) Decrease of \$11,418,000 due to elimination of 1966 nonrecurring items for research facilities.

Funds for the following nonrecurring items, provided in fiscal year 1966, will not be needed in 1967:

Facilities:

Control of western insects and cotton physiology (photoperiodism), Phoenix (formerly listed as Tempe), Arizona	\$1,150,000
Insect attractants and environmental research on stored-products insects, Gainesville, Florida	1,840,000
Control of livestock insects and toxicological and pathological effects of pesticides on livestock, College Station, Texas	2,990,000
Poultry research, Georgetown, Delaware ...	500,000
Alteration and improvement of facilities, Agricultural Research Center, Beltsville, Maryland	339,000
Pesticides research and chemical analytical work, Stoneville, Mississippi	1,564,000
Cotton physiology (growth and fruiting), Stoneville, Mississippi	506,000
Research to develop procedures and methods to avoid water pollution, Durant, Oklahoma	500,000
Cotton disease research, College Station, Texas	644,000
Cotton ginning research at Stoneville, Mississippi (\$92,000) and Mesilla Park, New Mexico (\$92,000)	184,000

Facilities (contd.)

Research on cotton ginning and storage prior to ginning, Lubbock, Texas	276,000
Subtotal	<u>10,493,000</u>

Plans for facilities:

Initial facilities for U. S. Meat Animal Research Center, Clay Center, Nebraska	300,000
Additional facilities for soil and water research, Bushland, Texas	25,000
Grain research facility, Manhattan, Kansas	225,000
Cereal rust research - University of Minnesota	50,000
Poultry husbandry research in Arizona	50,000
Modernization of facilities, Miles City, Montana	40,000
Regional laboratory for nutrition and consumer use research, North Dakota ..	50,000
National Sedimentation Laboratory, Oxford, Mississippi	100,000
Soil and water conservation research laboratory, Pendleton, Oregon	45,000
Pasture research laboratory, University Park, Pennsylvania	<u>40,000</u>
Subtotal	<u>925,000</u>
Total decrease	<u>11,418,000</u>

(g) An increase of \$751,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An overall explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

2) A net decrease of \$5,799,000 for plant and animal disease and pest control activities consisting of:

(a) An increase of \$152,500 for expanding burrowing nematode eradication activities. (1966 available \$479,000).

Need for Increase: The citrus industry in Florida holds an important place in the nation's agricultural economy. Nearly 75 percent of all citrus fruit in the United States is grown in Florida. About 26 percent of the world's citrus is produced in Florida; 27 percent of the world's oranges and tangerines; and 72 percent of the world's grapefruit crop. The total value of the citrus industry in Florida is estimated at more than \$2 billion.

The recent discovery of the burrowing nematode in one of the major citrus nurseries in Florida has created considerable difficulty throughout the citrus industry due to the large number of new plantings made in the State with stock from this nursery, and the many trees from the infested nursery that were replaced as resets in commercial groves.

In fiscal year 1966, contingency funds are being used for an emergency survey and inspection program of all citrus nurseries in Florida in cooperation with the State and the industry. Previously, only periodic and limited inspections were made of nursery sites. The recent outbreak is evidence that the eradication program must be strengthened.

There are 889 citrus nurseries in Florida growing approximately 3,788 acres of citrus nursery stock. It is imperative that growers establishing new citrus groves and growers planting resets in already established groves be assured of disease-free stock. From the one nursery recently found infested, a total of 29,512 nursery trees had been moved to 172 different properties. The cost of tracing all of these trees and the cleanup procedures involved will require a substantial expenditure of State, Federal, and private funds.

It is necessary that a continuing program be conducted to provide for inspections of nurseries to assure freedom from infestation, and provide a high degree of safety in preventing spread of the burrowing nematode. The citrus industry considers the burrowing nematode to be in the same category as such serious pests as the Mediterranean fruit fly, citrus canker, and citrus blackfly.

Plan of Work: The proposed increase would provide the additional funds needed for the regular and systematic inspection on a scheduled basis of all nursery sites.

(b) An increase of \$610,000 for plant quarantine activities consisting of:

1. Strengthening port-of-entry inspection force--\$310,000. (1966 available \$9,419,300).

Need for Increase: The task of preventing the introduction of foreign plant pests and diseases into the United States is a complex and

difficult one, due to the many varieties and vast number of these pests, their small size, and their habit of "hitching" rides on a score of miscellaneous agricultural and non-agricultural articles not normally considered host material. Further complicating the problem is the constant increase in foreign travel and trade, which is now such that the number of travelers entering the United States from foreign countries and offshore islands is at an annual rate approximately equal to the nation's population.

Nearly 8 million more people entered the United States during fiscal year 1965 than during the previous 12 months. Arriving 24 hours a day, seven days a week, an increasing number of these entries are at inland ports for ocean-going vessels and interior airfields thus increasing the hazard of quick spread of any introduced foreign pests within the country.

Augmented mass movements of military personnel and equipment, coupled with certain relaxations in immigration requirements further indicate the need for expansion of inspection activities to cope with the growing dimensions of the foreign-pest introduction problem.

Indicative of the scope of the problem is the number of plant pests and prohibited plant material intercepted. During fiscal year 1965, over 478,000 were made at ports-of-entry--21% over the average of the preceding five-year period. More than half of these interceptions were found in the 36.6 million pieces of baggage carried into the country by 186 million persons who entered the country during the year. The remainder was found, for the most part, in the stores of planes and ships, in mail and in commercial shipments.

Air passenger traffic, as well as air cargo, continue on a steady upward trend. The growing volume of vehicular traffic from Mexico and Central America (29 million vehicles in fiscal 1965) adds to the risk of pest introduction, making it necessary to intensify efforts to prevent the entry of dangerous pests from those countries. Travel to and from Hawaii and offshore islands continues to be increasingly popular, placing commensurate responsibility on the inspection force to forestall the movement of several notoriously destructive pests to the mainland.

The incidence of khapra beetle in ships and with all types of cargoes continues to be a growing problem requiring the application of many man-hours to the inspection of ships, cargoes, holds, storerooms and quarters. Several live khapra beetles, considered one of the world's worst pests of stored grain, were intercepted in passenger baggage at the Dulles International Airport in September 1965.

The overall workload for plant quarantine inspection activities is increasing 10 to 15 percent annually with significant increases in fiscal year 1965 for every major element comprising workload indices. The present staff finds it difficult to maintain the necessary quarantine control of an ever-increasing volume of foreign traffic and cargo entering U. S. ports.

Plan of Work: The proposed increase will provide for (1) 21 additional plant quarantine inspectors for assignment to 15 ports where traffic conditions and the danger of pest entry are most critical, and (2) the transfer of an additional \$96,000 to the Bureau of Customs to be used to hire additional customs inspectors required to continue inspection of incoming baggage at the present level. The additional inspection personnel would be assigned to the following ports where workload, based on current and foreseeable trends, cannot be handled adequately by the existing staff:

Arizona, San Luis
Nogales

Illinois, Chicago

California, Calexico
San Pedro
Travis AFB

Pennsylvania, Philadelphia

Texas, Brownsville
El Paso
Harlingen
Laredo

Florida, Miami
Port Canaveral
Port Everglades

Puerto Rico, San Juan

2. Overtime pay for Sunday work of plant quarantine inspection personnel--
\$300,000 (1966 available, \$ 0)

Need for Increase: Foreign traffic, particularly at international air terminals and land border crossings, moves every hour of every day. Plant quarantine personnel work side by side with employees of the Bureau of Customs, the Immigration and Naturalization Service, and the Public Health Service; and under special arrangements often perform primary inspection duties essentially the same as those performed by personnel from these other Federal agencies. To help offset the unprecedented traffic demands, primary screening of entries at many border crossings is equally divided among the four Border Clearance Agencies.

Existing statutes eliminate Sunday from the basic workweek of Customs and Immigration inspectors. As a result, inspectors for those agencies receive a minimum of two days' pay for any services performed on a Sunday. Working side-by-side with these Federal inspection personnel, the plant quarantine inspector receives no additional pay for working on Sunday.

Under the authority granted to the Secretary of Agriculture by the Import Overtime Act of 1950, it is proposed to bring the pay of plant quarantine inspectors required to work on Sunday more nearly in line with that received by personnel in the other Federal inspection agencies, by elimination of Sunday from their basic workweek. While in effect this will place many plant quarantine inspectors on a 48-hour week, it will tend to relieve the disparity in rates of Sunday pay which has existed for many years among inspection personnel of the Federal border clearance agencies.

There follows a computation of the additional costs:

Approximate hours of work each Sunday	1,160
(estimated December 1965)	
Approximate commuted travel time	240
Total, Sunday hours to be paid at overtime rate	1,400
No. weeks in year	x 52
Total number of Sunday hours in year	72,800
Current overtime rate	5.40
Cost of Sunday work (based on 1965-1966 requirements) ..	\$393,120
Anticipated increase in Sunday work	15,725
(approximately 4%)	
Gross cost of overtime work for Sunday	408,845
Less estimated manpower savings due to 48/40 hour/work week-approximately 11 man years	108,845
Net estimated additional cost Sunday overtime	<u>300,000</u>

Without additional funds, it is estimated that the present inspection force would be reduced by 30 man-years if these inspectors are to receive premium pay for Sunday work. Any reduction of inspection personnel would increase further the danger of pest and disease introduction.

(c) An increase of \$103,000 to strengthen port-of-entry inspection and quarantine activities required to prevent the introduction and dissemination of foreign animal diseases and pests. (1966 available \$1,815,800)

Need for Increase: The risks of foreign disease and pest introduction have increased significantly due to the widespread incidence of diseases and pests throughout the world; and increased international movements of people, animals and products, particularly by rapid air transportation.

The primary defense against disease and pest introduction from foreign countries is the mandatory inspection and quarantine of imported animals, animal products, and potentially contaminated animal materials at the air and ocean ports of entry; along the United States-Canada and Mexico land borders; and at more than 200 approved establishments at interior locations. To do the job adequately, more inspectors are needed.

Ports-of-entry inspection and quarantine procedures are based upon scientific knowledge about foreign animal diseases and the many insidious ways they may gain entry and become established. The introduction of such diseases as foot-and-mouth disease, rinder-pest, African swine fever, African horse sickness, dourine, glanders, fowl plague and also the vectors of diseases, including principally ticks from Mexico and South America, would cause substantial economic loss to the livestock industry and would seriously affect the national economy. The cost of increased inspection and quarantine service is very little compared to losses from new diseases or for eradicating them after they become established.

State livestock disease control officials and various livestock groups and producers have repeatedly expressed concern over the increased risks because of the lack of sufficient numbers of inspection personnel for adequate protection of the nation's livestock.

Plan of work: The proposed increase would provide 11 man-years of inspection and other personnel who would be assigned to ports-of-entry where the inspection workload is most critical. Also, it would provide for inspection and quarantine services at adjacent international airports, military installations, and zoological parks. The inspection personnel would be assigned at ports-of-entry as follows:

California, Calexico

Florida, Miami

Hawaii, Honolulu

New York, New York

Texas, El Paso

Puerto Rico, San Juan

(d) An increase of \$306,700 for the diagnosis, control and eradication of miscellaneous diseases. (1966 available \$905,900)

1. Equine piroplasmosis - \$102,300 (1966 available \$126,900)

Need for Increase: The presence of equine piroplasmosis in Florida poses a serious threat to the nation's horse industry valued at \$3.5 billion. This threat is greatly complicated by the fact that about 8,000 horses move into and out of Florida annually. The magnitude and complexities of horse movements from Florida to all points in the U.S. points up the real need to contain and eradicate equine piroplasmosis to prevent its spread to uninfected States. Eradication of equine piroplasmosis depends upon eliminating the vector, the tropical horse tick, which is present in 37 counties in southern Florida.

At the present time, activities are limited to enforcement of quarantines designed to prevent interstate spread; the inspection and spraying of known infested animals in a limited number of counties in an effort to control spread of the tick vector.

Plan of work: The proposed increase would provide for undertaking cooperative eradication activities including: (1) initiation of systematic area-by-area field inspection to locate and treat infested animals; (2) a strengthening of quarantine and control measures--especially spraying of animals moving out of known infested areas; (3) epidemiological investigations of outbreaks and isolated cases of equine piroplasmosis where they occur; and (4) differential diagnosis in areas where equine infectious anemia is present in the U. S., as the clinical symptoms of this disease are similar to equine piroplasmosis.

2. Survey and surveillance of feed and feed ingredients for disease-producing salmonella organisms - \$ 204,400 (1966 available, \$152,900)

Need for increase: Current reports show that many types of disease producing agents frequently are present in animal and poultry feeds. Scientists report that these contaminated feeds are a source of outbreaks of disease on farms, and present a very real hazard of transmitting food-borne disease of humans through animal products. There is considerable concern that something be done to assist in decreasing the human health hazards and spread of disease between animals and poultry caused particularly by Salmonella in foods and feeds. When press stories describe Salmonella outbreaks, an unfavorable image is created with respect to agricultural products, especially poultry and eggs. A large-scale survey is needed of feed and feed ingredients to determine the extent of Salmonella contamination. The aim would be to develop procedures to keep agricultural products safe for human consumption and avoid possible condemnation of products sold in interstate commerce.

Plan of work: The proposed increase would provide for a large-scale feed sampling survey, laboratory testing of feed and feed ingredients, and epidemiological studies in problem areas. Work would be carried out in the field and State-Federal and private laboratories in the major animal and poultry producing states with cooperation from State agencies and trade associations.

(e) An increase of \$615,000 to strengthen pesticides regulation activities under the Federal Insecticide, Fungicide and Rodenticide Act, as amended and related legislation. (1966 available \$2,621,100)

Need for increase: Continued government and public concern over pesticides requires increased emphasis on pesticides regulation activities. In order to carry out a critical review of labeling for all products submitted for registration or re-registration, and to maintain closer surveillance over the approximately 60,000 proprietary products presently on the market, the registration and enforcement work under the Act must be expanded.

The Act is the only Federal statute having jurisdiction over the marketing of pesticides. The requirement that such products be properly labeled and registered prior to interstate shipment provides protection for all segments of the American public--producers and consumers.

Before a product is accepted for registration, adequate data must be available to show that the formulation will be effective for the intended use without causing adverse side effects; safe when label warnings and cautions are observed; and that it will not result in illegal residues on food when used as directed. Although the intent of the registration function is to prevent the marketing of fraudulent products and to provide a reliable guide for proper use, to accomplish this goal the provisions of the Act must be enforced. The enforcement function consists basically of collecting samples of products subject to the Act, testing them for compliance with the requirements of the law, and instituting

legal action against the shipper and/or shipments of products found to be in violation. The enforcement activities must be strengthened if the purposes of the statute are to be fulfilled.

Plan of Work: To conduct a critical review of labeling for all products submitted for registration or re-registration and maintain closer surveillance over approximately 60,000 proprietary products presently on the market to assure their compliance with the law, the proposed increase would provide for:

(1) Increasing the field inspection enforcement staff to a minimum of one inspector for each two States, and provide for the necessary co-ordination of the inspection work. The additional personnel would be assigned strategically in areas of high production, shipment, or use of pesticides to assure maximum enforcement benefits.

(2) Increasing the chemical laboratory staffs at Beltsville and field laboratories to handle the increased collection of samples by the additional inspectors, and more rapid screening of products suspected of being in violation of the Act. The increase would also provide for increasing the pharmacological testing staff. A field facility would be established in the Gulf Coast area for testing of pest bird and animal control agents on those species not found in the Beltsville Area. A field operation would be established in the southeastern area for testing herbicides, defoliants, desiccants, and plant regulators on cotton, peanuts, tobacco and other crops grown in that area.

(3) Additional scientific staff to keep abreast of the increased registration workload and to provide for a complete review of the labeling for all products for which re-registration is requested at the end of the five-year registration period. Changes in registration policies and acceptance of many pesticide uses make a complete review of labeling essential. Increased emphasis on the enforcement program makes it necessary to add several positions to the various technical units of the Washington staff to evaluate the results of laboratory tests on the official samples and to recommend enforcement actions against those products found to be in violation.

(f) An increase of \$100,000 for preparation of plans for relocation of the present animal quarantine station, Clifton, New Jersey. (1966 available \$ 0)

Need for Increase: P. L. 88-592 (78 Stat. 939) 88th Congress, approved September 12, 1964, authorizes the sale of the United States Animal Quarantine Station at Clifton, New Jersey, to the City of Clifton for public purposes, and the establishment of a new quarantine station in the New York-New Jersey port and airport area. The Act requires the City of Clifton to pay to the Secretary the appraised value of the present property and provides that it will not be vacated and surrendered until the new station is equipped and ready for operation.

Surveys are being made of possible relocation sites. Such surveys have been limited to Federally-owned sites except that representatives of the Agricultural Research Service have discussed with officials of the Port of New York Authority the availability of airport property at the John F. Kennedy International Airport for use by the Department. Our records show that about 85 percent of animals and birds arrive by air. The new quarantine station should be located at, or as near as possible to, the point where most imports arrive. If Federally-owned land cannot be obtained, acquisition of a new site would have to be made by purchase.

The Act requires the Secretary to advise the Chairman of the House Committee on Agriculture and the Chairman of the Committee on Agriculture and Forestry of the Senate in writing of the facts about a proposed relocation site at least 60 days before making a site commitment. It is expected that final action on the new site will be completed during fiscal year 1966.

A commercial appraisal of the Federally-owned property at Clifton has been completed and is under review. The appraisal report places the current fair market value of the Clifton property at \$526,600. Previously, the value of the property and buildings at Clifton had been tentatively valued at \$300,000.

The Act provides that proceeds from sale shall be available until expended for establishment of a new quarantine station. Completion of the sale and receipt of the proceeds are expected to require considerable time.

Plan of work: The proposed increase would assure available funds for preparation of final architect drawings for the new quarantine station. This would insure orderly progress in relocation of the present Clifton Station when actual site selection is completed and sale of the property is completed. The total cost of the new station has been estimated at approximately \$1.1 million, exclusive of any costs for site acquisition if Federally-owned land is not available.

The new quarantine station would include air control to prevent the spread of airborne and insect-transmitted diseases; incineration equipment for safe disposition of animals and birds that die or must be destroyed while in quarantine and for disposition of manure and other potentially dangerous wastes; a pre-quarantine receiving and inspection area, with dipping vat and spraying equipment for treatments against exotic external parasites; etc.

(g) A decrease of \$321,300 due to elimination of 1966 non-recurring screwworm field survey within Republic of Mexico. (1966 available \$321,300)

An extensive field survey is underway in Mexico to obtain information not previously available relating to screwworm infestations. The survey will be completed in fiscal year 1966 and the funds will not be needed in 1967.

(h) A decrease of \$7,803,100 for plant and animal disease and pest control activities: (1966 available \$32,757,000)

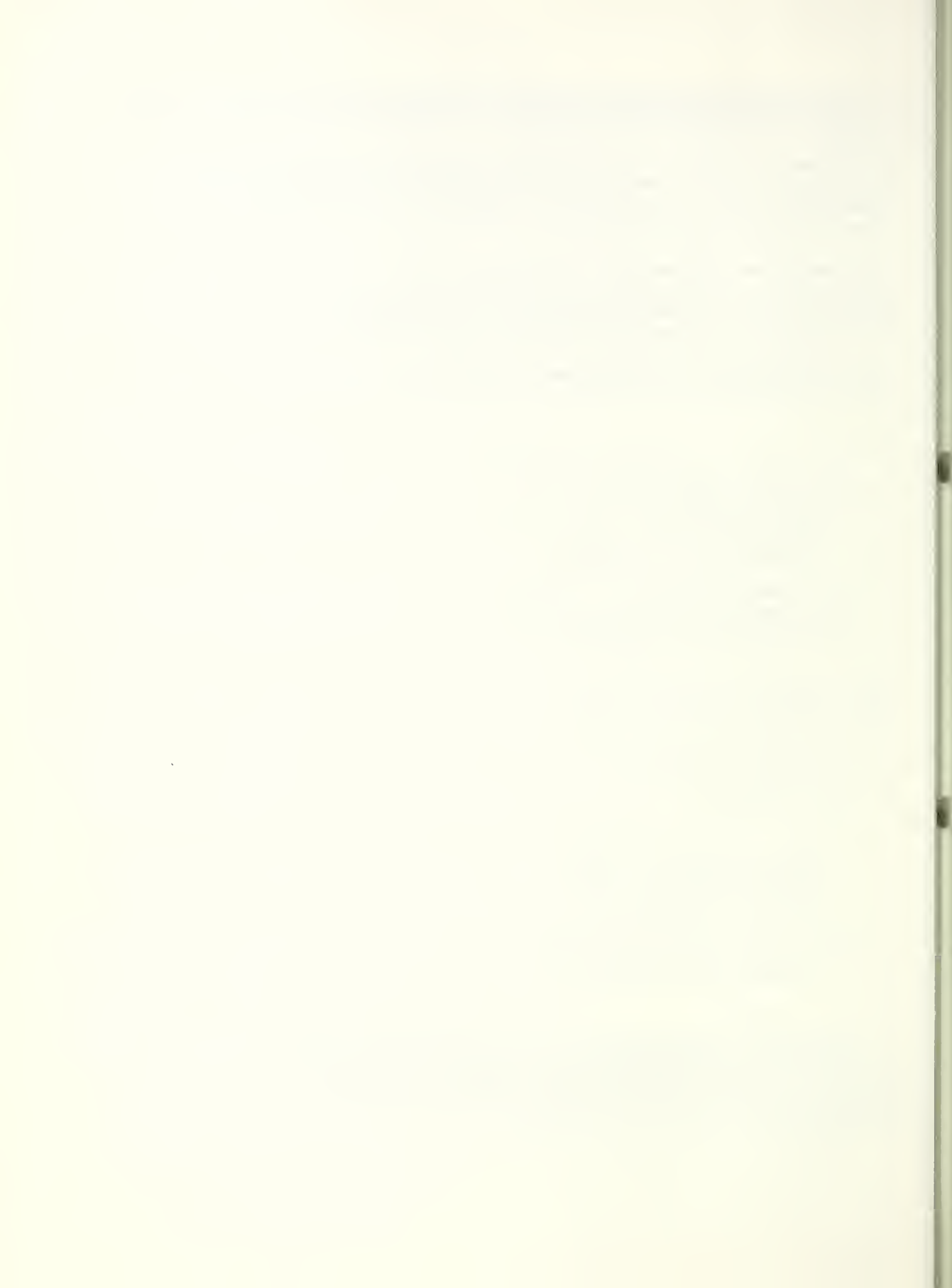
As a result of a review of activities which might be reduced or terminated to meet higher priority needs, the 1967 budget proposes the curtailment or elimination of Federal participation in certain control and eradication activities.

Some have been in operation for many years and it is believed that farmers and the States could assume responsibility for any continued activities. Other activities provide comparatively lower benefits to producers and others in meeting the total pest and disease program needs.

The distribution of the decrease, by activity, is as follows:

	<u>Decrease</u>	<u>To remain available, 1967</u>
<u>Plant pest control:</u>		
<u>Elimination of projects:</u>		
Imported fire ant	\$3,303,000	- -
Phony peach and peach mosaic	190,600	- -
Soybean cyst nematode	523, 00	- -
Sweetpotato weevil	296, 610	- -
<u>Reduction of projects:</u>		
Barberry eradication	371,700	\$510,000
Golden nematode	320,000	105,000
Gypsy moth	261,800	1,100,000
Witchweed	350,000	2,859,800
<u>Animal disease prevention, control and eradication:</u>		
<u>Reduction of projects:</u>		
Eradicating brucellosis	1,702,100	19,488,300
Eradicating scabies	484,300	1,047,500
Total	<u>7,803,100</u>	<u>25,110,600</u>

(i) An increase of \$438,200 to provide for full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)



STATUS OF PROGRAM

The Agricultural Research Service carries out the Department's scientific research in the fields of livestock, crops, soil and water conservation, agricultural engineering, utilization research and development, nutrition and consumer use, and marketing. It conducts both fundamental and applied research in these fields, utilizing physical, biological and other sciences.

Research is conducted at the 10,378-acre Agricultural Research Center, Beltsville, Maryland, and at numerous locations in the States, Puerto Rico, Virgin Islands, and in foreign countries. A large part of the research is in cooperation with State agricultural experiment stations and other public and private agencies. Research is also conducted under contracts and grants with various public and private agencies and institutions.

Programs for control and eradication of plant and animal diseases and pests are conducted to prevent introduction into the United States of pests and diseases of foreign origin, to prevent the spread interstate of those within the country, and to control and eradicate them where found. These programs are conducted at numerous locations in all States, Puerto Rico and Virgin Islands, on farms and ranches, at sea, air, and border ports of entry, in public stockyards and establishments licensed under the Virus-Serum-Toxin Act, etc. The Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is administered and enforced to insure that pesticide products in interstate commerce are correctly labeled, can be used safely, and are effective for intended use.

As a part of its regular programs, the Agricultural Research Service conducts research and prepares plans for preventing or combating foreign plant and animal diseases which might be intentionally introduced into the United States. Some research is also conducted on devising protective measures for decontamination and utilization of crops, animals, or soils affected by direct radiation or radioactive fallout, and personnel are trained for radiological monitoring services to minimize the effects of any radioactive fallout on animals.

FARM RESEARCH

Current activities: Investigations are conducted on production methods and improvement of field and horticultural crops and of farm livestock, poultry, and domestic fur animals, including means of control of plant and animal pests and diseases, which will be effective, economical, and avoid residue hazards. Soil and water conservation research is conducted to develop new and improved soil and crop management practices, improve irrigation and drainage methods, develop information on watershed hydrology, and determine the relations of soils to plant and animal nutrition. Engineering studies are made to improve the mechanization of crop and livestock production and the harvesting and processing of farm crops, to develop better types of farm structures and new uses for electricity on farms, and to adapt electrical equipment to farm use.

In recent years farm research has been continuously reviewed to emphasize work which would meet problems of agricultural surpluses, as well as market demands, to reduce cost of production, and to reorient research related to control of plant and animal pests to avoid or minimize pesticide residue hazards. This has included breeding and development of the meat-type hog which has met with consumer preference and has reduced fats in surplus, production of milk with high solids and lowered fat content, corn with waxy starch for glues and adhesives, corn with high amylose content for industrial uses, etc. With increased funds emphasis in fiscal year 1966 is being given to new means of dealing with pests that will eliminate or reduce residue hazards related to environment, to health-related tobacco research, and to investigations of deleterious molds.

Selected Examples of Recent Progress:

Animal Husbandry Research

1. Method developed for advancing genetic progress for milk yield. A "breakthrough" in method of evaluating DHIA cows in order to recognize and exploit those having outstanding breeding value will enable the dairy industry to advance genetic progress more rapidly than previously possible. The procedure initiated in 1964 considers the cow's deviation from herd mates, her paternal half sister's deviation from herd mates, and adjusts for the number of milk and milk fat records of the cow and daughters of her sire. Over one-half million cows are evaluated annually by the Department. From these, the top two percent are identified and the results made available to the dairy industry, along with genetic appraisals of sires in DHIA. These estimates of breeding value, when fully and effectively implemented through artificial insemination, could more than double the current rate of genetic progress for milk yield per cow in the nation's dairy herds.

2. Rumen microflora reference collection established at Beltsville. Intensive research on the identification and characterization of bacteria that normally populate the rumen of cattle has resulted in the establishment of an important single reference collection useful to investigators throughout the world. Specimens from the collection are widely used by researchers everywhere for comparative purposes. Samples of pure rumen bacteria are made available to other workers on request. Provided with each sample is information on identity characteristics, nutritional requirements and on metabolites. This painstaking work has been instrumental in advancing knowledge of the important role of rumen microorganisms in the digestion and metabolism of feed in livestock production.
3. Good management increases returns from beef production. Normal practice in beef production is to mate females so that they deliver their first calf at about 3 years of age. In the dairy herds calving begins at about 2 years of age. If beef producers could advance first calvings by 6 months to a year very great gains could accrue in production. Research at the El Reno, Oklahoma station has shown that beef cows can be managed to deliver their first calves by 2 years of age without adversely affecting mature size, longevity and future producing ability. However, it is essential that the breeding stock be well grown out at 2 years of age and that they be kept on a good plane of feeding subsequent to first calving or rebreeding may be materially delayed. This new practice if judiciously followed can greatly increase returns in beef production.
4. New concepts established for fattening rations for beef cattle. Historically, farmers and ranchers have believed that efficient feedlot performance of cattle depended on a liberal supply of good forage. Changing practices in feedlot finishing of cattle militates against feeding forage since it is difficult and costly to handle. In finding answers to this problem, scientists asked themselves the question, is forage needed in fattening rations? Researchers at Beltsville found that steers fed a fattening ration without forage and based on corn or wheat with proper supplements remained healthy and made efficient high rates of gain. The addition of minerals normally provided in the forage part of the ration were not beneficial. Urea used as a source of nitrogen was as effective in meeting the protein requirements as was vegetable protein. It was also found that wheat could be fed as the major source of carbohydrate. Thus, farmers who find forage difficult and expensive to provide can fatten cattle effectively without it.

5. New technique developed to determine requirements for growing beef cattle. In the highly competitive business of beef production, knowledge of the exact nutritional requirements and supplying these requirements with balanced low cost nutrients is essential for high efficiency. To gain this knowledge, scientists at Beltsville have turned to the use of synthetic diets, especially to raise young calves. Researchers at Beltsville have been successful for the first time in raising to maturity an animal that received all of its protein needs from a protein-free diet. The protein forming nitrogen was all provided in the chemically pure form, the rumen microorganisms apparently transforming the nitrogen to protein for the animal to use. During the 26 months the animal was on experiment, it grew to a weight of 930 pounds and gave birth to a normal heifer calf. With this new technique scientists will be better able to determine exact nitrogen (protein) requirements of growing beef cattle.
6. Cholesterol in blood of pigs related to heredity. In studies of the blood components of pigs in different genetic lines it was found that cholesterol in the blood increased as genetics for fatness increased. This was true for lines within breeds and the fatter breed also showed a higher average level of cholesterol. A sex influence was observed with castrate males averaging higher than females. Since the level of cholesterol in the blood of man has received much attention in connection with circulatory troubles, it appears that pigs may be useful in studies of basic reasons for variations in blood cholesterol. This finding contributes further evidence of the value of the pig as a research animal in studies of basic problems in human health and well-being.
7. Miniature swine herd established. In cooperation with the Food and Drug Administration, a herd of miniature swine has been established to produce animals for laboratory investigations and to investigate the genetics of body size in swine. These animals reach a mature weight of about 200 pounds and thus will be more economical to maintain. Furthermore, they can be handled under laboratory conditions for more effective studies of biological and physiological processes in mature swine.
8. Type of pig influences use of feed in the production of fat and lean. Pigs from lines in two breeds selected over several generations for high and low backfat responded differently to restricted feeding. Restriction of energy intake for high-fat pigs in both breeds reduced the pounds of fat but had no influence on the pounds of lean in the carcass at 220 days of age. Similar treatment for pigs in low-fat lines reduced the poundage of both fat and lean. Thus, restricted feeding improved the carcasses of pigs with genetics for high backfat but had little or no effect in this respect for pigs with genetics for low backfat. Since selection in these lines was

based entirely on backfat thickness attained at 175 pounds from full feeding, it is apparent that selection has been effective in developing strains of hogs that produce lean carcasses with full feeding. It is also apparent that the influence of limited feeding on carcass composition depends on the genetics of the pig for deposition of fat and lean tissue.

9. Method of predicting lamb production in ewe lambs developed. Profitable range sheep production depends in large measure on flocks of females that reproduce regularly. Research at the Dubois, Idaho sheep laboratory is devoted to improving the reproduction efficiency in range sheep. It was learned that lambs that showed recurring estrus cycles during their first winter when later bred produced 10.5 pounds more lamb in each subsequent year than did lambs that did not cycle during their first winter period. Early cycling lambs remained in the flock as productive ewes longer than the late cycling lambs. Careful observation and selection of early cycling lambs for breeding females is an effective way for ranchers to increase production of wool and mutton.
10. Oral supplementation of the diet with iron improves mink production fed high fish diets. So-called "cotton pelt," a condition in mink which renders the fur almost valueless, is apparently caused by an anemic condition in the animal. It often occurs when mink are fed high fish diets. The cause and possible avoidance of this condition has been under study at the Petersburg, Alaska Fur Station. Administration of supplemental iron was found effective only when it was injected and was useful as a corrective measure. In further research it was found that when ferrous fumarate, a highly soluble iron compound, was added to the diet "cotton pelt" was effectively avoided. The addition of this compound to the high fish diet also resulted in better general health and production.
11. Water starvation in poults studied. Research at Beltsville has shown that extremely high mortality in young turkey poults may result from rapidly drinking large amounts of water following water deprivation periods. Mortalities of 60 to 100% were obtained when two-week-old poults were deprived of water for approximately 48 hours. Attempts to return water-starved poults gradually to full water were unsuccessful. These results indicate that early mortality in poults may be due, in some cases, to water starvation instead of pathogens and emphasize the need for supplying drinking water to young poults at all times.
12. Commercially available chicken egg production stocks evaluated. Poultrymen are becoming more and more aware of the necessity of selecting stocks that are suitable to their particular circumstances as the margin of profit per bird decreases. To assist poultrymen in this important task, random sample tests are

conducted to permit evaluation of the various stocks. Performance records established by 143 commercially available stocks tested in 17 U. S. and 4 Canadian random sample tests were statistically analyzed. The analysis covered two years of test data. The statistical analysis predicts the performance of each stock as though it had been tested at all test locations over the two year period. This information, covering 16 traits of economic importance for each stock, was made available to poultrymen in this country and abroad. Approximately 28,000 copies of the 76-page report are distributed each year.

13. Genotype environment interactions affect egg production traits. Recent research, in cooperation with several Southern States, indicates that the performance of egg production stocks is influenced by an interaction between genotype and environment. Since such interactions were noted, it may be necessary for poultry breeders to evaluate stocks under a wide variety of environments and for chick buyers to select the stock best suited to his own environment. Results indicate that stocks rank differently in performance at different locations for sexual maturity, number of eggs, and body weights at 18 and at 58 weeks of age.
14. Removal of the bursa gland reduces leukosis in chickens. Leukosis is the most costly poultry disease, causing considerable losses to the poultry industry annually. Scientists have found that the surgical removal of the bursa gland (bursa of Fabricius) prevented birds from contracting visceral lymphomatosis, one form of leukosis. Removal of the bursa was effective in reducing the incidence of visceral lymphomatosis even when the experimental chicks were infected at hatching and the bursa was removed at 4 weeks of age. Normally, the causative virus multiplies rapidly and is found in the saliva and droppings four weeks after infection. While removal of the bursa is not a practical procedure, this knowledge will be very useful for further research.
15. Japanese quail developed to lay white-shelled eggs. Japanese quail are being used widely for research because of the low cost of growing them. Furthermore, they start laying eggs at about six weeks of age, as compared to 20 weeks for the chicken. Normally the quail lays a dark, speckled egg. At Beltsville, Japanese quail have been developed that lay a white-shelled egg. This white shell makes it possible to locate the developing embryo by candling. This increases greatly the usefulness of quail eggs to embryologists and biologists who use them for culturing disease organisms, vaccine production, and other research purposes. Inquiries for obtaining this stock have been received from research workers, including public health officials, throughout the United States.

Animal Disease and Parasite Research

16. New antigen discovered in anaplasmosis. In cattle suffering from severe anaplasmosis a new antigenic substance was discovered free in the blood stream. It is soluble and therefore can be dissolved from the blood. Antigens are substances that stimulate the formation of other immunologic substances called antibodies. This new soluble exo-antigen is being evaluated to determine its influence on the accuracy of diagnosis by serologic methods, its role in immunity, its effect on transmission of the causal agent and its potential use in biological control measures.

17. Causal agent of bovine anaplasmosis in the United States comparable in virulence to supposedly benign form in Africa. Bovine anaplasmosis, a costly disease, is caused by a microscopic parasite, Anaplasma marginale, located marginally in red blood cells; a related form, Anaplasma centrale, located centrally in red blood cells, occurs in African cattle. The latter is said to be harmless, and to protect against anaplasmosis caused by the "marginal" form. Critical comparisons of these two forms were made experimentally in Africa by a Beltsville scientist, using a "marginal" form transported to Africa, a "central" form procured there, and susceptible, imported cattle. Significant differences between the two parasites were not detected, either in disease produced, including degree of anemia, or immunization ability.

The findings of this evaluation are important because of strong recommendations that Anaplasma centrale be brought into United States and used as a vaccine against anaplasmosis caused by the indigenous parasite. To do so could result in another disease agent becoming established in American cattle unless thorough evaluations are made.

18. Bovine venereal trichomoniasis may be curable and eradicable by simple means. A synthetic compound, dimetridazole, has shown exceptional promise as a systemic treatment for this major reproductive disease of cattle. Previous treatments have been unreliable and have generally involved arduous topical applications of medicaments to the genital organs of infected bulls. Preliminary trials showed that animals were freed of the infection when dimetridazole was given by capsule or admixed with feed for 5 successive days. Moreover, current research indicates that similar results may be obtained with a single intravenous injection of the drug. Dimetridazole is well tolerated in all respects, and potential residue hazards are minimal since bulls of breeding age comprise a relatively

insignificant part of the food supply. This simple treatment, therefore, may aid considerably in salvaging valuable breeding stock and in ~~reducing the annual losses ascribed to the disease~~ in the United States.

19. Resistance to cattle lungworm produced by oral vaccination of calves with larvae of the thread lungworm of sheep. Research at the Beltsville Parasitological Laboratory has demonstrated for the first time under controlled experimental conditions that a species of livestock can be made resistant to one of its helminths by prior infection with another species of helminth that is not adapted for maturation in this host species and normally occurs and matures in another class of livestock. Immunity to the cattle lungworm, Dictyocaulus viviparus, was produced experimentally in young calves and short yearlings by oral vaccination with infective larvae of the thread lungworm of sheep, Dictyocaulus filaria.
20. Stephanofilarial dermatitis of cattle transmitted by hornflies. This nematode-caused condition occurs in as many as 90 percent of the cattle in some parts of the United States. Controlled experiments recently concluded at the University Park, New Mexico station demonstrated that the common hornfly is the vector of this disease. It seems probable that some measure of control of the disease can be accomplished by using presently available means of controlling hornflies, but efforts will be made to find a chemical that is effective directly against the causative worm parasites.
21. Pulmonary adenomatosis has been produced in cattle with the oxides of nitrogen. The pulmonary lesions produced by the inhalation of the oxides of nitrogen are similar to those observed in man affected with silo-fillers disease. Information from this research will be useful in explaining the pathogenesis of pulmonary alterations produced in both cattle and men exposed to these toxic gases. It is expected that this study will explain some of the alterations observed in bovine emphysema, bovine asthma and fog disease.
22. Biological transmission of bluetongue virus (BTV) between sheep and cattle demonstrated. Normal Culicoides variipennis were fed on a bluetongue infected sheep, incubated 14 days, and then had a second blood meal on a bovine. The disease developed in the bovine; and serial bluetongue transmission with insect bites was further demonstrated from bovine to bovine, as well as from each bovine to a sheep. This represents the first experimental evidence that cattle may serve as reservoirs of bluetongue virus since they develop a minimal clinical reaction of the disease. Also, the information is an important factor in understanding the pathogenesis of the disease.

23. Bithionol is effective in removing both liver flukes and liver tapeworms from sheep. Chemicals effective in removing full grown liver flukes have been known for many years, but these generally are not effective against the developing and growing flukes. This means that soon after a host animal is treated it becomes parasitized by a new population of adult flukes which arise from the drug-resistant developing stages. Previous work at the University Park, New Mexico station demonstrated that bithionol will remove practically 100 percent of liver tapeworms from sheep. It has now been found that this same compound has an appreciable effect in removing immature as well as mature liver flukes. The finding of a single compound with all of the attributes described above would be an extremely valuable contribution to the field of animal science. Accordingly, studies on bithionol and closely related compounds will be pursued.
24. Grain engorgement in sheep may be related to endotoxins from normal rumen bacteria. Toxic factors chemically and physiologically similar to bacterial lipopolysaccharide endotoxin have been extracted from rumen bacteria and from cell-free rumen liquor. The similarities in physiologic response of sheep to intravenous administration of these materials with the physiology of animals suffering from grain engorgement suggests that endotoxins from normal rumen microorganisms may play a significant role in the disease. Intraruminal administration of endotoxin had little effect on sheep and conditions permitting absorption of intact endotoxin from the gastrointestinal tract are not known.
25. Two viruses may be associated with transmissible gastroenteritis of pigs. Continuing research on transmissible gastroenteritis (TGE) of swine has indicated that there are two viruses which may be associated with TGE. One virus, a cytopathic virus, has been isolated from the intestinal tissue from several outbreaks of TGE. Antibodies against this virus are present in some of the convalescent sera from outbreaks of TGE in the field. Characterization studies indicate that the cytopathic virus belongs in the myxo class of viruses.

The noncytopathic virus has been isolated from one outbreak of TGE from which the cytopathic virus could not be isolated, and from one outbreak of TGE from which the cytopathic virus had already been isolated. There is no apparent cross protection nor cross neutralization between the two viruses.

Either virus can produce vomiting and diarrhea in newborn pigs. The role and relationship that each of these two viruses play in the overall disease, the problem of laboratory diagnosis, and the control and treatment of TGE will be elucidated by further research.

26. Destruction of trichinae by freezing at 0° F. delayed by previous exposure to near-freezing temperatures. Research at the Beltsville Parasitological Laboratory on the effects of cold temperatures on trichinae indicate that prolonged exposure to 34° F. increases the capacity of trichinae in fresh pork to resist destruction by freezing. One-pound patties of fresh ground pork containing 25,000 to 270,000 trichinae per pound were precooled to 34° F. for 51 and 135 days, respectively, immediately before being exposed to 0° F. in a home freezer to 9 cubic feet capacity. Trichinae in pork precooled to this temperature for the periods indicated survived exposure to 0° F. for 89 to 144 hours, respectively; whereas, trichinae in patties not so treated lived only 72 hours. These results show that the temperatures at which trichinous pork is held prior to freezing may influence the time required to kill them by this method.
27. Parasite identified at Beltsville may cause a probably widespread human disease in South Pacific. An entire worm, and parts of another worm in tissue sections, recovered from the brain of a mental patient in Hawaii were received for identification. The worms were determined to be the rodent lungworm, Angiostrongylus cantonensis. Based on this identification and subsequent findings by public health workers, the rodent lungworm is now believed responsible for eosinophilic meningoencephalitis of man. This disease, previously of unknown etiology, occurs in Hawaii, Tahiti, and other South Pacific Islands. Man probably becomes infected by eating mollusks which serve as the intermediate host of the parasite. Hookworm of man was among the first of a long series of human parasites discovered by Department parasitologists.
28. Carrier swine chronically affected by leptospirosis cured with antibiotics. Leptospire were eradicated from the kidneys of carrier swine by injections of streptomycin. The method will be of value in the control of leptospirosis in domestic animals. Although the treatment requires subcutaneous injections at the present time, investigators at the National Animal Disease Laboratory are searching for drugs which can be administered in the feed or drinking water.
29. The relationships between psittacosis-group agents found in birds and mammals studied. In a study of the relationships between psittacosis-group agents found in wild birds and in domestic birds and mammals, four strains isolated from wild pigeons, domestic turkeys and sheep were tested for their ability to affect eight species of birds and mammals. The experiments revealed that the four strains could be differentiated readily on the basis of their pathogenicity for mice, guinea pigs and pigeons. Observations of potential significance

to natural interspecies transfers were that the pigeon ornithosis and sheep polyarthritis agents produced severe airsacculitis in domestic turkeys. The polyarthritis strain not only produced crippling inflammation of the leg joints and tendons of lambs but also severely affected the hocks of turkeys. A sheep abortion strain was infectious for pigeons and lethal for sparrows suggesting a possible role of these wild birds in the interfleck transmission of that strain.

30. Immunizing agent for rinderpest studied. An avirulent form of rinderpest virus has resulted through serial passage of a modified strain of the virus in tissue culture by the limiting dilution technique. This modified virus when inoculated into cattle resulted in a high degree of immunity and protection against the disease. Three weeks after immunization cattle challenged with 100,000 lethal doses of virulent rinderpest virus showed no signs of illness. Subsequent to this work, officials in Egypt requested this modified rinderpest virus immunizing agent for use in their country. Results to date have been very good in water buffalo, native Egyptian cattle and cattle imported into Egypt. This highly fatal disease of cattle would cause tremendous losses if introduced into the United States.

31. Foot-and-mouth disease virus present in the pituitary and central nervous system of experimentally infected cattle. Foot-and-mouth disease virus was present in high titers in the pituitary glands of cattle during the early clinical, clinical, and early convalescent stages of the disease. The titers were equal to or higher than those found in the blood, and virus persisted in the pituitary gland for one to two days after it was no longer detectable in blood. In addition, virus was isolated from spinal cord, pineal body, cerebrum, and cerebrospinal fluid but less frequently, and with lower concentrations, than from the pituitary. Virus was not isolated from the cerebellum, medulla, or hippocampus.

The pharmaceutical industry imports pituitary glands into the United States from countries where foot-and-mouth disease exists. All commercial methods for production of pituitary hormone extracts do not inactivate the virus of foot-and-mouth disease, as evidenced by an outbreak of the disease in England following treatment of cattle with a pituitary hormone extract, which was later proved to contain foot-and-mouth disease virus. The hazard this poses to the livestock industry of the United States can best be ascertained by a study of the effect of each of the pharmaceutical processes on the virus, including those used by pharmaceutical industries in foreign countries.

Crops Research

32. Basic knowledge of biological systems advanced:

Isolation of a 3-component nucleic acid from cucumber mosaic virus may lead to better understanding of virus replication. Nucleic acids prepared from plant viruses normally consist of a single, macromolecular component. Infectivity is associated exclusively with this component. In contrast, nucleic acid prepared from cucumber mosaic virus consists of 3 well-defined macromolecular components. Infectivity appears to be associated with the fastest sedimenting component only. Significance and role of the slower sedimenting components are being investigated.

Purification and characterization of a virus of blue-green algae. A newly discovered virus infecting algae has been purified and characterized. There is interest in this virus not only because it is the first example of a virus disease of algae but also because of its potential in control of water-polluting algae. The virus was found to differ from plant viruses in that it had a tail, could infect without mechanical abrasion, and contained DNA. Thus it more closely resembles the bacterial virus than any known plant virus. The work was done in cooperation with scientists at the Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio.

Studies of light-regulated plant growth through phytochrome, a plant pigment. One of the several ways light operates through phytochrome to cause plant response has been found in the germination of seed of the empress tree, Paulownia tomentosa. Some kinds of light-requiring seeds germinate in response to less than a second of light. Those of the empress tree require more than 48 hours of continuous or intermittent light. Phytochrome, the light receptive pigment, is converted by light to an active form that starts the processes of germination. The pigment continues to act for a time after the light is turned off, but it eventually disappears. In the empress tree it must be reestablished by another period of illumination. Some empress tree seeds require the presence of active phytochrome for nearly 100 hours to induce germination. The active pigment continues to act for more than 40 hours after the light is turned off. This is in contrast to lettuce, in which germination occurs in 24 hours and the presence of the active form of phytochrome is required for only 10 or 12 hours. A separation of the light receptive substance from phytochrome has been made. It was shown to be chemically related to pigments in human bile and in blue-green algae.

Plant growth accelerating substances found in cotton fibers.

Plant growth accelerating substances have been extracted from cotton fibers. These substances were first detected in cotton filter papers and now have been isolated from cotton fiber in bolls on cotton plants. Three of the growth regulators have been partially purified and found to differ in composition from other well known substances such as indoleacetic acid and gibberellic acid.

Biochemical nature of resistance of pear to fire blight.

Natural resistance to fire blight in pear, Pyrus communis, was associated with (a) the presence of free hydroquinone (Quinol) as a major phenolic constituent of uninjured leaf tissue, (b) the enzymic release in injured tissue of additional quinol from the glycoside, arbutin, and (c) the accumulation and persistence of antibacterial quantities of preformed and enzymically released hydroquinone in injured tissues. The antibacterial activity of quinol in uninjured tissues was markedly repressed by an unidentified factor which was metabolized within 18 minutes in injured tissue, thus allowing full expression of the antimicrobial potential of the quinol.

33. Progress made in sucker control of tobaccos. In the search for better ways to control tobacco suckers, effective sucker control materials are being sought which are readily available and do not adversely affect the tobacco leaf. Among the many compounds tested both in the greenhouse and in tobacco fields, a group of fatty acid derivatives appears promising. Several compounds are in advanced tests at various tobacco-producing States. Different types of tobacco appear to respond differently to these compounds which are under extensive study. Fatty acid derivatives can be obtained from animal or vegetable fats readily available.

Studies are also being conducted on basic phenomena in tobacco sucker growth and development in order to find natural ways of regulation and control. The activity of naturally occurring growth hormones which are responsible for sucker growth is apparently related to an oxidizing enzyme system in the tobacco plant. The isolation and partial purification of such enzymes have been achieved. In addition, several analogues of nucleic acids have shown inhibitory effects. These analogues function at the core of every living cell where growth and development are directed.

34. Improved varieties of field crops:

Burley 49 tobacco. After 20 years of research by the Department and the Tennessee Experiment Station, burley 49 tobacco was jointly released by the developers for planting throughout the burley-producing area. The new variety is the first that is

resistant to an array of diseases that attack the crop in this region. Scientists at Beltsville transferred resistance to black root rot from Nicotiana debneyi, a wild relative of cultivated tobacco, into a tobacco breeding line. Additional breeding work in Tennessee introduced resistance to black shank, wildfire, tobacco mosaic and fusarium wilt, along with desirable agronomic characteristics and acceptable smoking quality. The resulting variety promises to reduce the need for chemical soil treatment, and to improve leaf yield and quality.

Rio, a new variety of sweet sorghum combining resistance to major diseases, high stalk yields and high sugar content, has been released for commercial culture. It is very resistant to two major diseases, rust and leaf anthracnose, and is damaged only slightly by other diseases. Yield tests in cooperation with the State experiment stations of Alabama, Georgia, Louisiana, Mississippi and Texas, show that Rio is adapted to a wide range of conditions. High sugar content and productive capacity indicate that it has potential as a supplementary sugar crop in the United States.

Tifdwarf bermudagrass, a new high quality turfgrass, has been released in cooperation with the Georgia Experiment Station. Tifdwarf is similar to Tifgreen in many respects, but is characterized by shorter leaves, lower growth habit, and a darker green color. It spreads faster and requires much less top dressing to maintain a good-appearing, smooth surface. The new variety promises to reduce the amount of mowing and associated labor costs now required on golf greens and other high quality lawn areas.

Delta alfalfa, cooperatively developed and released with the Mississippi Experiment Station, has remained productive for 5 years when planted in the heavy clay soil of the Yazoo-Mississippi Delta area. This long productive period appears to be due in part to tolerance to root and crown rots, leafhopper injury, and certain leafspot diseases. Limited quantities of certified seed of Delta are expected in seed trade channels by fall 1966 or 1967.

Magnolia, a blend of two rust-resistant ryegrass strains, for the southeast region, is being released in cooperation with the Mississippi Experiment Station in 1965. The two strains used, Stoneville 3 and State College 7, were selected for improved resistance to crown rust and leaf spot at Stoneville and State College, Miss., respectively. Magnolia has a higher percentage of rust-resistant plants than do Gulf, common, or ryegrass introductions from Uruguay, and has produced good yields of forage and seed in many regional tests. The variety has performed well under grazing and can be used for overseeding warm-season turfgrasses.

Hopicala, a variety of cotton developed for but unsuited to the El Paso trade territory because of too short staple length, has been released for production in the western region. Hopicala has a staple length about 1/16" less than cottons grown in the El Paso area, but yields well, has good spinning performance, and shows high tolerance to Verticillium wilt. Performance testing in the western region showed that in Arizona it produced fiber with better spinning performance than cottons commonly grown. Substantial production of this variety would enhance the quality of the Arizona crop. Hopicala's release illustrates the advantages of cooperative performance testing on a regional basis.

Pickett, an improved variety of soybean with resistance to the cyst nematode, has been released and seed will be increased and available for farmers' use by the 1967 crop season. This is the first yellow-seeded soybean variety with resistance to the soybean cyst nematode. It is agronomically suited to most of the cyst nematode-infested soils in the South Atlantic States and Mississippi Delta areas. It will enable farmers in these areas to resume soybean production on infested land without the danger of build-up of nematode populations in the soil. Consequently, it is expected to retard the spread of the cyst nematode to new areas. The development of Pickett is a major step in a joint Federal-State program to control the soybean cyst nematode which was developed cooperatively by the Department and the experiment stations of Arkansas, Missouri, North Carolina, Tennessee, and Virginia.

Mills and Hall guar are two new disease-resistant varieties that have been released in cooperation with the Texas and Oklahoma experiment stations. These two new varieties will extend the maturity range beyond that of Brooks, the only disease-resistant variety formerly available in the Texas-Oklahoma area. The maturity range extension will provide a better opportunity for the use of guar as a seed crop sold for the production of a gum widely used in industry. Both Mills and Hall guar have the same high-yielding capacity and disease resistance of Brooks. Mills matures earlier than Brooks, and Hall slightly later.

Dunes, a high-yielding, wilt resistant variety of flax, was co-operatively released with the California Experiment Station. It has good resistance to Fusarium wilt and is superior to present commercial varieties in both oil content and iodine number of the seed. It is particularly suited for growing in the Imperial Valley of California and adjacent areas in Arizona. Dunes has yielded about 10 percent more seed than the best commercial varieties, and has averaged 1.0 and 4.3 percent more oil in the seed than New River and Imperial, respectively. The iodine number of the seed is about 3 points higher. The variety is particularly well suited for planting on fields where the wilt-susceptible variety, Imperial, cannot be grown. It should also gain favor for foreign markets because of its higher oil content.

Frio, an improved variety of safflower with cold tolerance and high oil content, is being released in cooperation with the Arizona Experiment Station. Seed will be available to growers for planting in 1965-66. Frio has averaged slightly higher in seed yield, 2.9 percent higher in oil content, is more cold tolerant in the seedling stage, and more resistant to Phytophthora root rot than the leading commercial variety. It is expected that Frio will replace much of the acreage planted to Gila, particularly in Arizona where the improved resistance to Phytophthora root rot and tolerance to cold in the seedling stage should reduce growing hazards.

C.P. 55-30, a new high-yielding variety of sugarcane, was developed by Department scientists at Canal Point, Florida, and evaluated in cooperation with the Louisiana Experiment Station and the American Sugar Cane League. The first seed cane for increase was jointly released in Louisiana in July 1963, and it is now estimated that 15 to 20% of the Louisiana crop planted in 1965 will be of this variety. It is tolerant to cold injury and to inversion of sucrose between cutting and milling. An erect habit of growth makes it adapted for machine harvesting. C.P. 55-30 matures earlier than most commercial varieties and yields from 5 to 10% more sugar per acre. Early cutting for the mill does not affect stands of succeeding crops. The rate of inversion of sucrose between cutting and milling is less than most varieties. Although the new variety is susceptible to mosaic, the disease spreads less rapidly than in most commercial varieties.

Corn inbred tolerant to western corn rootworm released to plant breeders. An inbred line of yellow dent corn designated B64 that has a high level of tolerance to larvae of the western corn rootworm is being released to plant breeders.

The new line was developed by the Department in cooperation with the Iowa Experiment Station. Its development is a major step in the joint Federal-State program to control the western corn rootworm. This pest, which feeds on roots in the larval stage, and on silk and leaves in the adult stage, is one of the most destructive insects attacking corn throughout the Midwest.

Inbred lines of corn resistant to corn stunt and maize dwarf mosaic released. Through cooperative programs with Mississippi State College and the Ohio Agricultural Experiment Station, inbred lines have been jointly developed, following identification of resistance. Two inbred lines resistant to corn stunt have been released through the Mississippi Station, and two inbred lines resistant to maize dwarf mosaic have been released through the Ohio Station.

35. Other new crop varieties:

Two new blueberry varieties were introduced from the cooperative work between the Department and eastern State experiment stations. Morrow, introduced jointly with the North Carolina Experiment Station, is a canker resistant variety with good size, attractive color, and very early fruit maturity. It was introduced for commercial use in southeastern United States, mainly as a replacement for the Angola variety. Darrow, introduced jointly with the New Jersey Experiment Station, has larger fruits and is a more reliable yielder than the standard Coville variety. It is recommended as a replacement for the popular Coville variety.

Two new strawberry varieties were introduced from the cooperative work between the Department and eastern State experiment stations. Sunrise, introduced jointly with the Maryland Experiment Station, is an early ripening, red stele-resistant variety with bright red fruits that remain attractive longer than other red stele resistant varieties. It is recommended for areas where red stele is a problem. Earlibelle, introduced jointly with the North Carolina Experiment Station, is an early ripening, very attractive, firm-fruited variety having greater productivity in North Carolina than the standard Albritton variety. It is recommended for commercial culture in North Carolina and southward.

A new pecan variety named Mohawk has been released for culture throughout the southern pecan growing region. It produces large size, attractive, and high quality nuts, and matures early compared to other large-fruited pecan varieties.

A dry bean variety, Seaway 65, has been released. It is similar to Seaway released in 1962, but is resistant to all important races of anthracnose as well as common bean mosaic. It is also superior to Seaway in yield and processing qualities.

A new light red kidney type bean, Montcalm, has been released which is resistant to alpha, beta, gamma races of anthracnose, matures earlier than commercial Light Red Kidney, and has superior seed quality.

Two new snap bean varieties have been released. Yakima, is a curly top resistant snap bean variety adapted to home gardens in areas where beans cannot be grown because of curly top virus. Provider is very early, high yielding and widely adapted to areas of the South where bean production formerly was not profitable.

Monona potato has been released because it has exceptional chipping qualities at harvest and after cold storage and conditioning. It also possesses moderate resistance to Verticillium wilt and viruses A and Y.

Spring Pink poinsettia has been released. It is a uniform light-pink color which does not fade with age; is vigorous, strong-stemmed, and keeps longer than most other pink types. The color is new for poinsettias and especially useful for flowering after Christmas and during the early spring.

A new variety of Euonymus, Longwood, has been recently released which will aid Natural Beauty Program. The variety, collected in Japan in 1961, was named in commemoration of the cooperative ornamental exploration program between Department and the Longwood Gardens, Kennett Square, Pennsylvania. In effect since 1956, these cooperative expeditions have produced a number of new varieties of commercial value. 'Longwood' euonymus is an evergreen groundcover with especially small leaves for the species and a very prostrate habit. It propagates rapidly, makes a groundcovering mat quickly, and is regarded as having improved quality over existing varieties of the genus.

36. Plant explorations provide natural resistance to plant pests. Original centers-of-origin of crops have provided reservoirs of pest-resistant germ plasm for breeding natural resistance to pests. Exploration for bean germ plasm in Central America and Mexico was begun during the spring of 1965, and is to continue in a two-phase program. The first phase yielded over 800 diverse types of beans that were being grown in remote villages of the area. In the fall of 1965 the same area will be sampled again to bring a broad segment of bean germ plasm to American breeders. Other plant types sought include wild potatoes, tomatoes, and relatives of the sweet potato. All introductions will be evaluated mainly as sources of genes for resistance to insects, diseases, and nematodes.
37. Abscisin II in the cotton plant studied. The chemical structure of the naturally occurring growth substance, abscisin II, has been determined by a USDA-University of California research team. Subsequent synthesis by the group has yielded a chemical differing slightly from abscisin II but whose biological activity in laboratory tests equals the natural hormone. In addition to the regulation of defoliation, abscisin II is known to inhibit plant growth, to promote plant aging, and to induce dormancy in buds. A synthetic hormone similar in activity to abscisin II has potential usefulness in crop production and harvesting operations. Synthesis of the chemical in sufficient quantities for production and harvesting studies is currently underway.

38. Cotton varieties improved:

Regional cotton variety tests organized. A system of regional cotton variety tests has been organized as a cooperative project between State agricultural experiment stations in 15 cotton-producing States and the Department. Participating stations collect and furnish agronomic data to the Beltsville stations, and submit fiber samples to the U.S. Fiber and Spinning Laboratories at Knoxville, Tennessee. All data are programmed for summary and statistical analysis by automatic data processing in the Department. These data provide the most reliable and accurate description of varietal characteristics that have ever been obtained, and allow the separate influence of ecological and genetic factors to be estimated with precision. The results, which have been published annually since 1960, have been highly useful to farmers, breeders, merchants and spinners.

Cotton improvement in the southeast and midsouth. Cotton varieties with fiber properties which contribute to efficient processing and a quality finished product are necessary to the survival of the cotton industry. Germ plasm sources of cotton with fiber properties considerably better than commercial varieties have been available for many years. However, these experimental strains lacked the yield components required for economic production. Over the past 20 years progress has been made toward combining yield and quality components until the "gap" between high quality cotton and economic production has become relatively small. A regional test was conducted in 1964 to compare the performance of today's high quality strains with economical commercial varieties now in production. Preliminary data show that the high quality strains yield approximately 90 percent that of the best commercial varieties. This represents much progress and offers hope that the general quality level of American Upland cotton can be improved in the near future.

39. Light replaces after-ripening (vernalization) in some seeds. A discovery has been made that continuous light exposure of certain seeds which normally require long periods of cold treatment for germination will cause immediate sprouting and growth. For example, strawberry seeds normally require several months of cold treatment before they will grow. However, when exposed to continuous fluorescent lighting they grow promptly without cold treatment. Potato seeds normally require aging for many months for after-ripening before they will germinate. Treated under continuous light the seeds germinate promptly.

40. Bulb research creates rapidly growing new export industry. Using techniques derived from cooperative Department and State research, an export trade to Europe in Dutch iris and daffodil bulbs in 1964 amounted to over a million dollars. This new industry, developed in a small area of Washington State, competes successfully with Holland-grown bulbs because the American bulbs bloom earlier and have larger flowers. Department scientists found that earliness and ease of forcing inherent with climatic conditions is further improved by heat treatment at 90° F. for 3 days. Exposure to low concentrations of ethylene also accelerated flowering and reduced vegetative growth. The new export industry now captures most of the market in the United Kingdom and Sweden, and markets in West Germany and Japan are anxious for American-grown bulbs when the domestic production increases to the point that shipments can be made there.
41. Crambe abyssinica continues to progress as a commercial crop. Crambe, a promising source of erucic acid, has made good advancement toward commercialization in the past year. Approximately 1,100 commercial acres were planted in 1965 with a prospect of 5,000 acres next year. Utilization aspects have improved remarkably as the oil has been shown to function as a superior mold lubricant in the continuous casting of steel.

In the Willamette Valley of Oregon, crop yields have been excellent in increase plantings. About 25 tons of seed will be available to growers in 1966. Research on varietal selection, agronomic practices, and related cultural factors, is being undertaken cooperatively with the Oregon Experiment Station. Crambe entered the diverted acres program as a "mustard" in 1965. In 1966 it was accepted under its own name in the feed grain, cotton and wheat diverted acres program.

42. Sand dropseed no longer considered a weed on Southern Plains rangelands. Studies at Woodward, Oklahoma have shown that sand dropseed and native tall grasses are complementary to each other. During drought periods yield of tall grasses declined to approximately 80 pounds per acre while sand dropseed increased to 650 pounds per acre. During wet years tall grasses increased to 850 pounds per acre while sand dropseed decreased to 50 pounds. As a result of this complementary action, range production on sandy soil at Woodward tends to stabilize at around 700 pounds per acre. Sand dropseed is the only important grass on the Southern Plains that increases during drought periods. It should be included in all seedings on sandy soils.

43. The reniform nematode widely distributed. The reniform nematode, Rotylenchulus reniformus, has been found to be widely distributed in the southeastern United States and Texas. This important pest attacks cotton, sweet potatoes, and a variety of other kinds of crop plants. Field experiments showed that the reniform nematode reduced cotton yield by 32 percent in Louisiana and by more than a third in Alabama where this nematode contributed to an increase in the incidence of Fusarium wilt of cotton. Studies in Alabama indicate this nematode is easily controlled by proprietary nematocides, although little is known of other means of control.
44. Degradation of 2,4-DB residues in forage established. Using newly developed methods, it has been established that residues of 2,4-DB are degraded in legume and grass silage. Rainfall significantly accelerates the disappearance of herbicides from forage and weed plants. As little as 0.1 inch of simulated rain caused significant decrease of herbicide residue. These findings were made possible by developing an improved method for determining residues of 4-(2,4,-dichlorophenoxy) butyric acid (2,4-DB) in silage and forage crops in a cooperative program with the New York Experiment Station.
45. Wind increases loss of volatile herbicides. Air movement has been recognized as a factor in the field performance and persistence of volatile herbicides. The scope of these effects, however, was not measured under controlled conditions. In experiments at Beltsville conducted with air velocity chambers specially built for the purpose, the rate of loss of EPTC (ethyl N,N-di-n-propylthiolcarbamate) from soil surfaces in static air was greatly accelerated by exposure to an air-velocity of only 4 m.p.h. The importance of applying volatile herbicides during the night or early morning when air movement is minimum, and the use of soil-incorporation techniques immediately after treatment as an aid in preventing loss of vapors, is emphasized by these findings.
46. U. S. National Arboretum. Appearance of the National Arboretum has been significantly changed by demolition of the last of the barracks buildings remaining from CCC days. Progress in improvement and development of research and display plantings has included a rather complete rearrangement of the dogwood planting with addition of 1275 plants in 67 genera and species, and with construction of a new overlook facing the Anacostia River named in honor of the late Mrs. Walter Douglas. Development of the Gotelli conifer planting continues, with planting expansions in several additional areas.

Herbarium reference collections have been augmented by acquisition of 70,000 specimens of the Philadelphia herbarium of Isaac Martindale, noted for its rich representation of plants of Southern United States and for its 1860-90 collections of cultivated materials. A program of specimen exchange has been explored with 1225 botanic gardens and experiment stations in the U.S. and 80 foreign countries. The distribution of new or rare plant materials was extended by the Arboretum during the past year to many stations of this country and abroad.

A record of public visitation shows increasing attendance from distant States and foreign countries, with a one-day peak of 30,000 visitors. Many hundreds of school children have participated in half-day sessions under the Widening Horizons Program.

Newly named ornamentals for home garden and park use have included: Ilex Tanager, a new small-leaved holly with red fruit and compact habit, and Azalea Camp's Red, an easily propagated June-flowering deciduous azalea of strong red color.

Entomology Research Division

47. Low volume sprays show increased efficiency in the use of insecticides. Research continued in 1964 and 1965 determined the value of insecticide sprays applied as low volume treatments from aircraft. Research on grasshoppers showed that the efficient application of insecticides as low volume sprays is not limited to malathion since good results were obtained with diazinon, MC-A-600, naled, and carbaryl. Good control of mosquito larvae was obtained with malathion, parathion, and fenthion. Field tests on cotton insects showed excellent control of the boll weevil, thrips, and fleahoppers with low volume applications of malathion. Information on spray deposits indicates that increased efficiency of low volume insecticide sprays is due at least in part to a higher rate of deposition of the insecticide on plants within the effective spray swath. In limited studies on cotton, spray deposits in the spray target area were 2.7 times as high as for standard high volume sprays. Total recovery studies indicate that more of the standard high volume malathion emulsion spray drifts beyond a 1400 foot area downwind from the spray lane than is the case of the low volume applications.
48. Nuclear polyhedrosis virus tested against bollworm-tobacco budworm complex in field experiments on cotton. Field evaluations of a bollworm polyhedral virus have continued with promising results. In an experiment conducted at Brownsville, Texas, a virus formulation at a dosage equivalent to 100 diseased larvae per acre was as effective as 2 pounds of toxaphene plus 1 pound of DDT per acre. At Waco, Texas, the same dosage per acre gave control of a light bollworm infestation equal to that obtained with carbaryl at 2 pounds

per acre. In two experiments at Stoneville, Miss., this dosage reduced boll injury from bollworms below that of the check and at Tallulah, Louisiana, gave bollworm control equal to that of 1 pound of DDT per acre.

49. Reflective aluminum repels aphids and reduces incidence of aphid-borne virus diseases on vegetables and ornamentals. A unique new nonchemical method of insect control involves the use of reflective aluminum sheets applied as a mulch in fields of certain vegetables, ornamentals, and other crops to reduce attack by disease carrying aphids. This research has demonstrated significant reductions in the incidence of cucumber mosaic, squash mosaic, watermelon mosaic, and gladiolus viruses when the respective crops were protected from aphid attack by the aluminum mulches. Insecticides frequently do not kill these aphids quickly enough to prevent serious crop losses resulting from virus transmission. Indications are that use of aluminum mulches may afford protection to many important crops by repelling aphids.
50. Alfalfa weevil parasites established and spreading. One of the major research efforts to control the alfalfa weevil involves the use of natural parasites. In foreign exploration work several parasites have been found and imported for release in alfalfa weevil areas. New imported parasite releases have been made in Vermont, New York, Ohio, Indiana, Illinois, and Missouri. Four parasites are now established and spreading at one or more locations. The parasitism rate by T. incertus at a 1962 release site in Massachusetts was 64% in the spring of 1965, and that of B. curculionis in another location in Massachusetts was 44%. The rate of parasitism by these two species at release sites in Pennsylvania, Maryland and Virginia was less than 5%, but some buildup and spread is indicated.
51. New insecticide exceptionally effective as a mosquito larvicide. Several new insecticides under study are highly effective against mosquito larvae but relatively non-toxic to other insects and fish and wildlife. American Cyanamid EI 5260 (Abate) causes high mortalities of mosquito larvae at a concentration of only 0.005 ppm. It has a very low mammalian toxicity of about 3,000 mg/kg. This insecticide appears to be largely specific in action against mosquito larvae, since it is relatively ineffective against adult mosquitoes, flies and other insects. In field tests applications of only 0.025 lb/acre of Abate have provided 99-100% control of several species of mosquito larvae. Dosages of 0.1 and 0.15 lb/acre not only gave complete initial control but prevented further larval breeding for about 2 weeks in log ponds.

52. Sex attractant found in fall armyworm. In the continuing study of sex attractants, it has been shown that a wide variety of insects produce highly attractive materials. Research at Tifton, Georgia, has demonstrated that chemical extracts of virgin females of the fall armyworm cause marked responses by males of the species at very low dilutions. The activity of the attractant produced by virgin females varies with the age of the moths. It is hoped that the structure of the attractant can be determined and eventually synthesized for use in detection and control of this important pest of corn and other crops.
53. Light traps for tobacco hornworm control. Results of a three-year experiment using 3 light traps per square mile over a 113 square mile area near Oxford, North Carolina, indicate that light traps combined with certain cultural practices reduced the hornworm population on tobacco plants about 50% in 1962, 80% in 1963 and again about 80% in 1964. The greater reduction of population in the latter two years may be attributed to the increased grower practice of destruction of tobacco stalks after harvest. Tobacco stalk destruction immediately after harvest reduces the number of overwintering hornworms in the soil and results in fewer moths to infest tobacco the next growing season. The low hornworm populations within the light trap area greatly reduced the need for insecticides to control hornworms on tobacco. In 1964 growers in the light trap area used less than one-half the number of insecticide applications for the control of tobacco insects than did growers outside the area.
54. New method for applying systemic insecticides developed. The application of candidate systemic insecticides to stems of cotton shows promise as an efficient and desirable way to employ insecticides for cotton insect control. Formulations of experimental systemic insecticides, applied to stems of cotton plants, were effective against boll weevils in greenhouse tests. Bidrin and two other materials applied as stem treatments to field growing plants gave up to 80% mortality of newly hatched bollworm larvae caged on the plant terminals. In 1965 a tractor mounted applicator with rotating brushes for applying the materials to stems was developed. Preliminary results with stem treatment of SD-9129 at 0.25 and 0.5 pound per acre with this applicator gave cotton fleahopper control comparable with that obtained with 1 pound of toxaphene plus 0.5 pound of DDT per acre applied as a conventional spray. Preliminary results indicate that the method is a more efficient and a more effective way to use systemic insecticides for cotton insect control than the conventional seed treatment and granular side dressing methods.

55. Effective treatments developed for repelling aquatic leeches. Special research was initiated at the request of the U.S. Army on the development of repellents for the protection of military personnel from blood sucking aquatic leeches in tropical areas. Preliminary tests showed that deet, undecylinic acid and several other materials applied to the skin repelled leeches or prevented them from biting but none persisted very long after immersion in water. Several formulations containing deet or other repellents and lanolin were perfected which withstood long periods of immersion and over 450 rinses. These materials have been evaluated under tropical field conditions and have proved extremely effective in protecting humans from leeches. Recent research has shown dibutyl toluamides to be outstanding repellents for leeches. Ortho and para isomers of dibutyltoluamide and the meta isomer of diisobutyltoluamide were more effective and withstood more rinsing as unformulated materials than standard repellents formulated in lanolin.

Soil and Water Conservation Research

56. Structure of a ribonucleic acid determined. A group of scientists from the U. S. Department of Agriculture and Cornell University, working at the U. S. Plant, Soil, and Nutrition Laboratory at Ithaca, New York, recently completed the determination of the structure of the alanine-acceptor ribonucleic acid (RNA). This is the first nucleic acid for which the complete structure is known. The alanine RNA is one of a group of nucleic acids known as transfer RNA's. They are the smallest biologically active nucleic acids. Their function is to carry activated amino acids to the site of protein synthesis. The determination of the structure of the alanine RNA is a major step toward a better understanding of the process of protein synthesis. Through discoveries of this type, some controls over the process of protein synthesis may eventually become possible. These controls may open up new routes of attack upon critical problems of nutrition, genetics, and medicine.
57. Farmers soon may irrigate by pushbutton or radio. A new system to automate surface irrigation by remote radio control offers excellent possibilities to conserve irrigation water supplies by more efficient water application and, at the same time, reduce labor requirements. Field scale operations at Newell, South Dakota, and Fontenelle, Wyoming, have demonstrated conclusively that remote control of simple pneumatic valves is possible up to distances several miles from the farmstead. Two types of pneumatic valves have been developed and operated to apply irrigation water on level or nearly level basins, graded border strips, or to furrows supplied either from open ditch or pipeline distribution systems. Basic components consist of: (a) The nylon-reinforced rubber pneumatic valve, (b) a three-way solenoid control valve, (c) a source of air pressure, and (d) a remote timer and transmitter. The system is a year or more away from the commercial market. Research continues on such things as comparative labor costs, comparative application efficiencies, "fail-safe" devices, transmission of signals by wires, as well as radio, and testing durability of components.
58. Hydraulic design of spillway trash racks studied. Trash racks for pipe outlet spillways should be mounted outside the high velocity flow region, according to findings of the Outdoor Hydraulic Laboratory, Stillwater, Oklahoma. Experiments on a full-size structure subjected to flows laden with stick trash have shown that moving a trash rack outward from the entrance crest a distance of only one-half of the diameter of the pipe outlet reduced the entrance loss coefficient from 2.2 to 1.5. Adding a skirt or side panel to the rack reduced this coefficient to 0.1. These findings will lead to the economic solution of the vexing problem experienced in some areas of the plugging of pipe spillways by trash and debris carried by the flow.
59. New method of application of evaporation retardants to water surfaces developed. A new method was developed at the U. S. Water Conservation Laboratory, Tempe, Arizona, for continuously applying evaporation retardants to a water surface without using any mechanical

devices. Discrete particles of long-chain alkanols, such as hexadecanol and octadecanol, were dispersed in a water-soluble matrix and were released as the matrix dissolved when placed in water. Several **saccharides**, including corn syrup and hydroxy-ethyl cellulose, proved satisfactory as matrix materials. The rate of producing evaporation-retarding films on the water surface was controlled by varying both the matrix-alkanol formulation and the area of material exposed to the water. A small vial of matrix-alkanol material, suspended from a float, reduced evaporation from a large outdoor tank by 40 percent for a two-week period. The soluble matrix provides an effective, inexpensive method of continuously applying evaporation-reducing films to small ponds and reservoirs for extended periods of time. The method has not been tested on large reservoirs.

60. Concrete blocks surpass riprap in controlling erosion along stream-bank. An experimentally designed and placed streambank protection of cellular concrete blocks has successfully withstood floodflows for eight years on Buffalo Creek near East Aurora in western New York. The precast cell units are 16x24 inches and 4 inches thick, each with 24 holes 2x2 inches in size, and weigh only 83 pounds. The cellular concrete-block revetment was placed in a bend of the stream adjacent to a quarried stone riprap revetment containing a median stone of 17 inches with maximum stone weight of 3/4 ton. Only three of more than 600 blocks originally laid have been lost from flow conditions, whereas the performance of the 17-inch quarried stone riprap has been unsatisfactory. The two types of revetment would cost about the same under contract, \$10 per square yard, if the concrete blocks were mass-produced and if quarried stone were available locally. Since 24-inch stone would be needed to provide streambanks protection equal to the concrete blocks, the cellular concrete block revetment is extremely competitive with quarried stone riprap revetment.
61. Evaporation from the soil after summer rains. How much of the moisture from summer rains in the Great Plains is stored in the soil and how much is lost by evaporation is a practical question of real importance. At Akron, Colorado, eight simple and inexpensive lysimeters 1 meter square were designed and installed to study daily water loss under various crop-soil conditions. Initial studies with these lysimeters, together with measurements of net radiation, indicate that the evaporation from a partial buffalograss cover after a light summer rain is equal to about one and one-half times the equivalent net radiation after a wide-spread rain. These data show that light summer rains in the Great Plains are frequently ineffective because of high evaporation rates brought about by large amounts of stored heat in the soil.
62. New concepts about the erodibility of cohesive soils. Contrary to presently accepted belief, a soil material does not have a single constant resistance to erosion, but a range in values, according to findings at the Sedimentation Laboratory, Oxford, Mississippi.

For example, tests on a large number of cohesive soils show that maximum erosion rates for a given flow condition increased as the influence of wet aging--in soils where it induces stability--decreased. Soils that stabilized rapidly with wet-aging time exhibited maximum erosion rates at low antecedent water-content and became less erodible as the antecedent water content approached near-saturation.

On the other hand, soils that stabilized quickly with wet-aging time exhibited maximum erosion rates at a higher antecedent water content; and further, the peak erosion rates were greater. Such information about the cohesive properties of soils provides needed new insights for design of more effective measures for stream channel stabilization and erosion control.

63. Soil water storage important in reducing flood flow. Analysis of one of the major storms of the 28-year record at the North Appalachian Experimental Watershed, Coshocton, Ohio, showed that soil water storage greatly reduced runoff, but that runoff could have been reduced below flooding had total soil moisture storage capacity of the upper 14 inches been used. Soil moisture observations prior to the storm showed that a total of 2.36 inches of water could be stored in the upper 14 inches - 1.85 of which occurred in the top 7 inches of soil. Of the 2.50 inches of storm rainfall there was 0.69 inch of runoff and soil water storage increased 1.81 inches - practically the same as the storage space available in the top 7 inches of soil. Little of the available soil storage space below 7 inches was used in this severe storm period. If the storm water had been able to penetrate quickly into the pore space in the top 14 inches of soil, there would have been only 0.14 inch of runoff, and no flood. The study pointed out the need for developing soil management practices that permit the absorption of storm rainfall to greater soil depths and hence, decrease flood flow.
64. Deep tillage offers great promise in Texas Blacklands and on certain Palouse area soils. Profile modification of Houston Black clay to a depth of 2 feet by rototilling resulted in increased growth of both cotton and grain sorghum and control of cotton root rot at Temple, Texas. Improved plant growth resulted from reduced soil strength permitting greater root proliferation, better temperature-moisture relations, improved nutrient availability, or a combination of these factors. The absence of cotton root rot was probably due to desiccation of the soil after rototilling but may have been due to improved temperature-moisture-aeration relations. Root proliferation to greater depths results in the plants using water from lower parts of the profile, thus increasing storage capacity and reducing runoff.

Plowing Freeman and Naff-Garfield soils in the Palouse 3 feet deep increased water use by alfalfa. These soils near Pullman, Washington, have dense B horizons of clay loam or silty clay texture which limit root penetration to depths of 20 inches or less. Deep plowing permitted roots to penetrate and extract water from greater depth, thus

increasing the total water supply to the crop and implying a potential for reducing loss of precipitation as runoff. Deep plowing where the B horizon was 30 inches or more from the surface did not measurably increase rooting depth or water extraction.

65. Loss of pesticides in runoff and erosion. Losses of the pesticide compound 2-4 dichlorophenoxyacetic acid (2-4D) from a preemergence application in washoff (runoff water and soil) from farmland were affected by the formulation of this material, the time interval before rainfall occurred after the material was applied to the soil, and soil moisture at the time of application. In tests using the bioassay method with cucumber roots at Watkinsville, Georgia, concentrations of 4.4 and 1.3 parts per million (p.p.m.) of the ester and amine forms, respectively, were measured in the washoff from an excessive-rate storm of 2-1/2 inches per hour applied 1 hour after 2.2 pounds per acre of these materials were sprayed on bare soil. When the rain was continued for 2 hours the concentrations in the washoff during the last 30 minutes of the storm were 0.5 and 0.1 p.p.m., respectively. Losses of the amine form with test rains 48 and 96 hours after the material was applied were less than half the losses with the rain applied at 1 hour. Losses were somewhat greater in all cases where the materials were applied on wet soil than where they were applied on dry soil. Losses were from material in solution and that adsorbed on the eroded soil. This strongly implies that management procedures, including those that affect runoff and soil loss, can be effective in reducing the movement of specific pesticides into surface runoff water.

66. Statistical method developed for estimating the maximum rainfall. A method was developed by the USDA Hydrograph Laboratory for estimating both the probable maximum rainfall and lesser rainfalls on a frequency basis for durations from 5 minutes to 24 hours. The procedure requires the use of several graphs and two statistics which can be computed from generally available tabular or graphical data. The probable maximum rainfall, which is defined as the largest rainfall that is ever likely to occur at a specific location for a particular duration, is used in the design of hydraulic structures for agricultural watersheds when the risk of failure must be minimized. Frequency statistics are used for design criteria when a calculated risk of structure failure can be accepted.

Agricultural Engineering Research

67. Design suggestions for housing for seasonal farm workers presented. Designs and design suggestions intended to help commercial farmers provide adequate housing for seasonal and migratory farm workers have been prepared and published in AID 296, "Housing for Seasonal Farm Workers; Designs and Design Suggestions." Migrants tend to return to work for growers who provide suitable quarters and growers should find it less expensive in the long run to do this rather than to operate without good help. The bulletin gives design suggestions and floor plans for dormitory, apartment, and combination dormitory-

apartment units, with emphasis on family-type housing. The material presented is based on standards suggested by the President's Committee on Migratory Labor and will enable architects, engineers, and builders to design adequate housing that will conform to local codes and regulations and be readily acceptable to financing agencies, including the Farmers Home Administration.

68. Low-cost house framing system aids low-income farmer in "self-help" construction. Construction of a prototype house using a simple pole type (post and girt) frame has demonstrated that the cash outlay for such a structure can be materially reduced through appropriate design, selection of materials, and substitution of self-help for hired labor. Simplification of the design and erection techniques has reduced the level of skill needed for construction, thus allowing for more self-help contribution, and reduced the material requirement by about one-third without sacrificing structural strength. This development enables the person whose income is low because of less than full-time employment to utilize his free time to advantage in self-help construction.
69. Automatic cattle sprayer design reduces volume of pesticide needed for effective treatment. Field test of an automatic cattle sprayer developed at Kerrville, Texas, has confirmed experimental findings that it controls hornflies on cattle as well as more conventional equipment, and with 30 to 40 percent less insecticide. This sprayer is activated by the cattle stepping on a switch-mat. It applies a measured volume of insecticide through a system of nozzles. The application is uniformly distributed over the animal by the placement of the nozzles. This development is a significant contribution to the reduction of pesticide residues as well as reduction of labor and cost required in spray treatment of cattle.
70. Triband herbicide applicator. A team of engineers and plant physiologists at Stoneville, Mississippi has developed a triband herbicide applicator which maximizes weed control in cotton. This equipment places high activity herbicides of low or moderate selectivity on the shoulder areas to provide complete control of weeds in those two bands and herbicides compatible with cotton, though somewhat less active on weeds, in the drill row.
71. Cotton stripper improvements save labor and maintain quality. The use of tractor-mounted baskets, designed by Department engineers at Lubbock, Texas, in cooperation with the Texas Experiment Station, has reduced labor requirements for harvesting cotton with strippers by more than 40 percent when compared with the use of conventional tractor-drawn trailers. Further, the introduction of a green boll trap in the system materially reduced the amount of extraneous material and helped prevent staining and heating in the harvested seed cotton. The potential annual use of these improvements is more than two million acres.

72. Mechanized citrus harvesting studied. Mechanical harvesting of grapefruit and early maturing oranges by use of the shaker and catch frame system appears ready for industry adoption as the result of Department cooperative research with the Florida Experiment Station and industry. With this equipment a 4-man crew can harvest about 10 trees per hour regardless of the yield per tree or more than twice as fast as hand-picking, a reduction of 50 percent in the number of seasonal workers required. The quality of the fruit has been judged acceptable for processing. On the basis of yield, trees mechanically harvested showed no ill effects the succeeding year. Studies of fruit loosening methods to facilitate mechanical harvesting of Valencia oranges have been initiated along with investigations on pruning.
73. Mechanical blueberry harvesting proves faster and less costly. In 1964 over a third of the cultivated blueberry crop was separated from the bush with hand-held vibrators and allowed to fall into portable canvas frames. Total cost of harvesting was about 3.5 cents per pound compared with 8 cents when handpicking. The need for short-time seasonal workers was reduced by over 5,000 and the reduction in harvesting cost was over half a million dollars.
74. Optimum time for seed harvesting related to moisture content. Field studies at Corvallis, Oregon, in cooperation with the Oregon Experiment Station, on the optimum time for harvesting forage crop seeds indicate that moisture content and maturity are predictable and closely related to yield of viable seed and field losses from shattering. Tests performed on six grass and legume crops show that if producers use seed moisture as a criterion for the correct time to harvest, total losses can be decreased from a high of 77 percent to less than 20 percent for such seed crops as crimson clover, hairy vetch, subterranean clover, bluegrass, orchard grass, and Alta fescue.
75. Environmental cabinet for poultry disease research developed and performance-tested. A prototype environmental cabinet of unique design that provides for independent programming of air temperature (cabinet top, bottom, and each sidewall), relative humidity, air velocity and other environmental factors has been developed and performance-tested at the Southeast Poultry Research Laboratory, Athens, Georgia. The cabinet is also designed to permit measurement and control of several air pollution factors such as ammonia, carbon dioxide, pathogenic organisms, air ionization, as well as lighting and other radiation. The cabinet is designed to be used as a laboratory tool in studying the relationship between housing environment and disease incidence and transmission.

UTILIZATION RESEARCH AND DEVELOPMENT

Current activities: Investigations are conducted in the field of chemistry and related physical and biological sciences to develop industrial chemicals, new and improved foods, feeds, drugs, fabrics, and other products from agricultural commodities. New methods for evaluating the suitability of commodities for processing, and improved processing methods are devised and tested. Ways are sought to increase the use of byproducts. The purpose is to effect maximum economic utilization of agricultural commodities. In recent years, this research has been responsible for opening new markets for cotton by adding wash-and-wear and high-stretch properties, greatly increasing the demand for soybeans by making this commodity a major source of vegetable oil for food and industrial uses through improved processing technology, and for finding markets in plastics and feeds for over 800 million pounds annually of tallow and greases after these commodities lost their traditional soap markets. With increased funds, additional emphasis is being given to such problems as health-related research on tobacco and prevention of harmful molds in agricultural products.

Selected Examples of Recent Progress

1. WORLD Wheat attracts interest both in the United States and in Asia. Cooked whole-kernel wheat, free of colored bran -- called WORLD Wheat -- has been substantially improved during this past year by its Department inventors. Industry had raised certain objections to the earlier WORLD Wheat process; high water consumption, unsaleable brand byproducts, and difficult effluent disposal. All these objections have now been overcome. Better lye treatment has (a) reduced water use to 8 pounds per pound of wheat, (b) produced a compressible bran which can be used in feeds, and (c) resulted in an effluent capable of biological reduction to a harmless state. These improvements also have markedly reduced the cost of the process. A continuous and automatic pilot plant -- utilizing the new improved procedures -- has been built to determine the best conditions for future installations. The plant, rated at 250 pounds per hour, has been used to make several tons of WORLD Wheat which was tested in Hong Kong by Church World Services. Acceptability of the product was found to be outstanding. The new process is competitive in costs with conventional bulgur processing.
2. Polysaccharide gum from corn sugar commercialized. Four industrial companies are now producing "B-1459" water-soluble gum by the Department's process for bacterial fermentation of corn sugar. This gum has a potential multimillion-pound market in industrial and food uses. Solutions of the gum in water exhibit unusually high viscosities that are stable over wide ranges of temperature and concentrations of salts,

acids, and alkalies. In contrast, presently available commercial gums are deficient in one or more of these qualities. Two of the companies have submitted requests for Food and Drug approval, based largely on Department feeding tests showing negative toxicity.

3. Improved Wheat flours. Department scientists have developed methods for treating wheats, as well as flours milled from them, to reduce the microbial population in the finished flours to very low levels--1 percent or less of the number present when treatments are not used. Since the micro-organism content of flours is important to the storage life of refrigerated, frozen, and cooked convenience foods, most manufacturers of convenience foods are purchasing flour under specifications designating maximum permissible levels of bacteria, molds, and yeasts. Without special treatments, flours are normally too high in microbial count for use in the convenience foods. Studies have shown that finished flours can be improved substantially by grain cleaning and the use of certain chemical agents in the washing and tempering waters. However, when the level of microorganisms is high in the wheat, such treatments do not give a low enough count in the flour for critical uses. This difficulty has been overcome by developing processes based on moderate heat treatment of the wheat before milling or of the flour after milling. Processes involving these heat treatments could be adapted to any mill with only moderate additional capital expenditures and operating costs.
4. Standby process for reducing radioactivity in wheat. The Department has demonstrated a feasible method for the reduction of the radionuclide, strontium-90, in wheat and its milled products. Radioactive fallout is primarily deposited by rains, substantially in water-soluble form, and deposits on the foliage and seed head of the plant and in the soil. Under present low levels of atmospheric radioactivity, about 80 to 90 percent of the strontium-90 in wheat grain results from surface deposition of fallout and 10 to 20 percent from absorption through the roots. In case of high density fallout, however, a much higher proportion of the total radioactivity would be surface deposition. A washing procedure using warm dilute solutions of phosphoric or citric acids (well-known food acids) has been developed by Department scientists which can be integrated into the milling process. Using this process, a total of about 75 percent of the strontium-90 was removed from a hard winter wheat blend; the milled fractions showed decreased radioactivity of 81 percent for the bran, 71 percent for shorts, 45 percent for clear, and 27 percent for patent flour. These results indicate that wheats can be decontaminated sufficiently

for food purposes in times of emergency. Also, the treatment offers the possibility of providing feed fractions that are considerably improved with respect to strontium-90 content.

5. High protein rice flours. Department scientists have shown that substantial quantities of rice flours of up to 16 to 20 percent protein can be abraded from the surfaces of either ordinary or parboiled milled rices. Currently available types of milling machinery are used, thus production cost is minimal. When only three to five percent of the starting rice is milled off, the residual kernels are whiter, cook better, and have negligible breakage. The color improvement is especially prominent with parboiled rice. The rice thus has a slightly higher sales value, perhaps high enough to offset the cost of producing flour. The bland flours are non-allergenic, low in fiber, and provide high quality protein for infants, for adults with high blood pressure, and for elderly people who have dietary problems with normal sources of food protein. A large potential export outlet for the flour also exists to supply protein for weanling children in developing countries. The cooked flours from parboiled rice can be used directly to make gruels, or they can be converted to powdered soluble beverages in this country for sale overseas. Further studies are being undertaken in cooperation with UNICEF and with industry to incorporate these flours into new products such as baby foods, beverages, and soups.
6. New dehydrated alfalfa data for least-cost feed formulations. A cooperative basic research effort has been undertaken by the Department, two universities, a major feed company, a research institute, and the American Dehydrators Association to acquire precise analytical data for all nutrients in dehydrated alfalfa and other processed feedstuffs as a prerequisite to calculating least-cost feed formulations. Such complex calculations previously have been impossible due to inadequate analytical methods for alfalfa products and to lack of high-speed electronic computers. Dehydrated alfalfa samples from all major production areas of the country have been subjected to exhaustive chemical analyses and metabolizable energy assays utilizing newest-developed techniques. Thus, an important gap in basic knowledge is being filled and this knowledge is being used by industry to make effective use of alfalfa meals in minimum costs feeds. The research is now being extended to other forage crops.
7. High-fashion stretch cotton lace prepared by simple process. A simple, inexpensive process has been developed by Department scientists for the production of stretch cotton lace with attractive esthetic properties, including a sculptured three-dimensional textured prized in the fashion world. The process-- an adaption of the slack mercerization process now used extensively in the production of all-cotton stretch fabrics-- is

applied to conventional machine-made laces to give these normally flat laces a rich, full, and more expensive appearance. Amount and direction of stretch can, by design and weave, be confined to specific segments of the lace pattern to make them stand out in relief. The new properties are durable and can be enhanced further by a resin treatment to impart dimensional stability and wash-wear properties to the lace. Interest has been expressed by several lace manufacturers, and lace products of this type should be in commercial production in the near future.

8. Commercialization of improved cotton batting assured. Widespread commercialization is assured of "Cotton Flote"--the new chemically treated cotton batting developed in cooperation with the National Cotton Batting Institute, Textile Waste Association, National Cottonseed Products Association, and the Foundation for Cotton Research and Education. One major automobile manufacturer approved the new batting for use in some of its 1965 models; and one producer of batting has already manufactured and supplied large quantities of Cotton Flote for this purpose. It is anticipated that two other major automobile manufacturers will approve the product soon. At least seven other batting producers are piloting the process for making Cotton Flote. Because of its improved resilience, dimensional stability, and coherence, Cotton Flote is competitive with all types of cushioning materials, including plyurethanes and foam rubber. As the availability of the new product increases, its use will undoubtedly be extended to the bedding and furniture manufacturing industries. The use of cotton fibers by the automotive, furniture, and bedding industries represents potential cushioning markets exceeding \$1 billion at the retail level.
9. New antimicrobial agents for cotton fabrics commercialized. In cooperation with the Canvas Products Association International and the Foundation for Cotton Research and Education (affiliated with the National Cotton Council of America), Department scientists recently developed an efficient, inexpensive treatment (based on new zirconium-copper agents) for improving cotton fabric resistance to weather and rot. The new agents, all the components of which are commercially available, have the advantages of good resistance to micro-organisms such as mildew and algae, good durability, low cost, freedom from odor, and ease of application. Cotton treatment has completely resisted mildew and algae growth for more than 36 months of outdoor exposure. Five companies are currently using the new treatment for commercial production of outdoor weatherable cotton fabrics, and at least 25 other companies have expressed interest in the discovery. The major potential for these new antimicrobial agents is for tarpaulins, shoe linings, boat covers, industrial thread, awnings, and tobacco shade cloth. The market potential is estimated to be equivalent to 265,000 bales of cotton per year.

10. Superior wash-wear finishes adopted by industry. Carbamate wash-wear finishing agents, developed by Department research scientists, are being produced commercially in the U. S. and abroad. These agents are currently used to treat an estimated one million yards of cotton fabric per day. The carbamates produce high-quality wash-wear finishes with outstanding durability to damage by laundering and chlorine bleaching. In addition to retention of smart appearance, the superior durability prevents garment shrinkage after a few launderings as sometimes occurs with cottons treated with less resistant finishes. One of the new carbamates shows promise for quick commercialization. In addition, this carbamate appears to be a good agent for deferred cure finishing to produce durably creased, wash-wear cotton garments. Representatives of three large industrial manufacturers have stated that the cost of carbamate intermediates used in preparation of these wash-wear finishes can be reduced to make the new agents competitive with all but the cheapest wash-wear agents.
11. Formaldehyde stops yellowing of moist wool. A new formaldehyde treatment protects raw wool from the yellowing and consequent economic losses which occur when fleece is shorn and baled under adverse conditions. If the moisture content of the raw wool is over 30 percent, the temperature within the bales rises as much as 40°F. within a week. Yellowing starts at once and increases for many weeks. Both the yellowing and the temperature rise are associated with a combined chemical and microbial action. It has now been discovered that both chemical and microbial action can be prevented by spraying the raw wool with a dilute formaldehyde solution or by lightly dusting with paraformaldehyde prior to baling. Cost of the additional processing is negligible--in the order of 0.2¢ per pound of grease wool. This new treatment will save money by (a) eliminating a bleaching step in processing, (b) avoiding the consequent fiber weakening, and (c) maintaining the higher price which white wool commands. Avoidance of bleaching is also desirable because, while it may temporarily whiten the wool, the yellow color often reappears during later use, especially if the wool is washed in hot water.
12. New and improved peach products. A number of attractive processed peach products developed by the Georgia Agricultural Experiment Station, under contract research through funds supplied by the Area Development Administration, are being successfully evaluated. A major advantage of several of the new products is that they provide markets for surplus peaches and for peaches whose size and appearance make them unsuitable for use as fresh fruit. Clear peach juice concentrate has already been commercialized for use in wine stock and is a potential ingredient of peach jelly, marmalade, waffle syrup, ice-cream, and fruit drinks. Puree-type peach concentrate,

based on the contract research and made by a commercial food processor for test marketing by the Georgia Peach Commission, has evoked favorable evaluation. Chilled peach sections also have been successfully test marketed and appear to be a particularly promising product. Representatives of industry are presently exploring the feasibility of building a new plant to manufacture the new peach products. Other products are in various stages of development.

In research carried out by the New Jersey Agricultural Experiment Station under a USDA contract, several new freestone and clingstone peach varieties with excellent processing characteristics have been discovered. A total of 46 freestone and 61 clingstone varieties were tested during 3 successive seasons (1962-1964) for suitability for canning and freezing. One freestone variety, which was highest in vitamin A and C contents and outstanding in flavor, particularly is expected to play an important role in future breeding programs.

13. Bitter limonin discovered in grapefruit juice. Excessive bitterness is one of the main factors that limits the consumer acceptability of grapefruit juice. In the past, grapefruit bitterness was ascribed to a substance called naringin, whereas the bitterness of navel orange juice is due to another compound, limonin. Department scientists have now discovered that limonin also may occur in grapefruit juice in amounts (up to 10 parts per million) sufficient to contribute significantly to the bitterness of the juice. Limonin, when present, is located primarily in the pulp of the fruit and enters the juice during extraction. The knowledge that limonin, as well as naringin, contributes significantly to the bitterness of grapefruit provides for the first time a sound basis for developing a successful debittering process.
14. New onion pungency test adopted by industry. Onions, with a farm value of \$85 million, are the sixth largest vegetable crop grown in the U. S. Because onions are used in foods largely for their appealing pungency, the value of dehydrated onions is directly related to their strength of flavor. Basic research by Department scientists has now led to a new objective method for measuring flavor strength of onions. They (a) discovered the principal chemical reaction responsible for flavor development when onion cells are crushed, (b) showed that the quantity of pyruvic acid produced by this reaction is directly related to pungency, and (c) then developed a test to measure the pyruvic acid. This achievement has been adopted by the domestic dehydration industry for selecting raw materials for processing, and by plant breeders to obtain varieties of onions more suitable for processing. In addition, one large

user of dehydrated onions specifies purchases according to this test. This Department research is thus resulting in improved products for U. S. consumers.

15. Progress made in aflatoxin research. Significant progress has been made toward controlling contamination of agricultural products with aflatoxin, potentially a problem for many agricultural commodities. An essential first step was the development of efficient methods of assay. Procedures devised for analysis are faster, more accurate, and more sensitive than those available only a year ago. In fact, a new micro method permits assay of even a small piece of the commodity under consideration. A working standard prepared by Department scientists and distributed widely to laboratories requesting it has greatly improved standardization of results. Animal feeding tests are being conducted to determine the relation of aflatoxin to adverse physiological effects and to assess the possibility of its transmission in food products. Several important methods of inactivation or removal of aflatoxin appear promising: (a) extraction with a mixed solvent such as acetone-hexane-water has proved effective; (b) chemical treatments, particularly those based on ammonia, appear to be promising; (c) environmental conditions that limit growth of aflatoxins are being defined as a means of preventing or at least minimizing aflatoxin occurrence in commodities.
16. Low-calorie, protein-rich, whole peanuts. Low-fat peanuts can now be prepared by a new process without the use of solvents. Whole peanuts are mechanically pressed until most of the oil is removed; they are then expanded to their original size, dried, roasted, and salted. This new product contains about 65 percent less fat than conventionally roasted peanuts. With the removal of the oil, percentage of each of the remaining constituents is correspondingly increased. Thus, the percentage of proteins in the extracted product is much higher than in the original peanuts. These peanuts have the shape of conventionally preferred roasted peanuts and closely simulate their texture, flavor, and aroma. Acceptance of these savory, low-calorie peanuts is expected to expand rapidly when the laboratory process is scaled up to commercial use. This development should strengthen the half-billion dollar retail market value of peanuts derived from the \$200 million farm value of the peanut crop.
17. New fire-retardant paints based on tung oil. Major progress has been made in the development of water-resistant, intumescent, fire-retardant coatings based on tung oil and its derivatives through cooperative research with the U. S. Army Engineer Research and Development Laboratories and the

Pan American Tung Research and Development League. Although fire-retardant paints are available commercially, they are unsuitable for many domestic, industrial, and military uses, since they lack some requisite conventional properties (such as water resistance) and thus cannot be applied to exteriors. In Department research, vehicles containing tung oil or chemically-modified tung oil have been synthesized and formulated into paints. These experimental coatings are highly resistant to water and to weather; they perform well in the standard Underwriters Laboratories 25-foot tunnel furnace test, and also have good drying and bonding characteristics and serviceability. The tremendous industrial interest in those formulations indicates that commercialization would consume large volumes of domestic vegetable oils--not only tung, which is an essential component, but also linseed oil, dehydrated castor oil, and others.

18. Improved stability of linseed oil emulsion paints. Department scientists have made another important contribution to expanding the use of linseed emulsion paints by discovering a novel way to give these products greater stability. Conventional linseed oil paints usually contain zinc oxide to prevent growth of mildew on the paint film. In water-based paint systems, the zinc oxide and titanium oxide (a white pigment used in most exterior paints) develop opposite electrical charges. This causes gradual clumping, and greatly shortens the storage life of the paint. Department scientists have found that addition of a commercially available phosphate chemical overcomes this problem and gives the paints the needed increase in storage life. Results of this research also make it possible to predict the occurrence of interactions between particles of other paint pigments that might be used, so that undesirable combinations can be avoided. Based on this and other basic research, industrial production of linseed emulsion paints is making rapid gains. Three major producers are now marketing linseed emulsions for use in formulating paint. One of these alone is supplying emulsions to some 150 paint manufacturers. One of the nation's largest retailers is among those distributing linseed emulsion paints. The potential annual market exceeds 140 million pounds of linseed oil.
19. Low-cost, non-burning, rigid polyurethane foams from castor oil. The construction industry is a potential yearly outlet for as much as one billion pounds of plastics for insulation and vapor barriers. Polyurethane foams, with their unique property of on-site fabrication, should realize a large share of this market as they become accepted by the building industry. For making these polyurethane products, a reactive liquid mixture can be poured into voids (e.g., roof, floor, or wall members) where it foams

up and fills the void with an instantly-formed rigid foam that gives strength and provides a stable barrier against heat, sound, and vapors. Such polyurethane foams are now mainly based on petrochemicals, but Department research has demonstrated that modified castor oil can be used to make polyurethane foams. These castor-oil-based foams can be made flame-resistant with no loss in other properties by incorporation of reactive flame-resistant chemicals. These completely non-burning foams are significantly less expensive than similar fire-resistant foams based on petrochemicals. Based on the results of this Department's research, several large fatty acid processors have initiated development programs in this field. Large increases in castor oil could result, requiring up to 200,000 new acres of castor.

20. Crambe oil for the steel industry. Oil from crambe, a new crop being developed by the Department, has been evaluated in cooperation with industry as a mold lubricant for the continuous casting of steel. The results showed that crambe oil is superior to any other material tested or used to date for this purpose. In continuous casting, molten steel is poured through an oscillating mold. Proper lubrication of the mold is essential to ensure continuous emergence of a high quality ingot. Continuous casting is a relatively new but rapidly growing process. Six years ago there were less than 20 installations throughout the world. Today there are over 100. The potential market for crambe oil in this process is 7 to 8 million pounds annually. Substantially increased plantings of crambe are planned this year to provide oil for this outlet and to encourage development of still further end uses.
21. Kenaf, a new potential raw material for papermaking. Department scientists have demonstrated that kenaf pulp can be used to make a wide range of types of paper having commercially acceptable properties. Kenaf, which has been in the Department's program on new crops, is an annual crop that can be grown in many areas of the U. S. Yields of over 10 tons per acre of dry matter have been readily obtained. Yields as low as 6 tons per acre should make the growing of kenaf economically feasible in lieu of corn and wheat according to studies by Department scientists. As a result of these studies, industrial interest in kenaf as a pulp crop is increasing. At least five major paper companies are investigating kenaf through plantings and pulping studies.
22. Commercial-scale process developed for removing strontium-90 from milk. Commercial-scale development of the fixed-bed method of removing radiostrontium from milk has been achieved successfully through contract research supported in part by the Public Health Service. The milk was processed at a rate of 12,500 pounds per hour in an established commercial dairy which had been equipped with strontium-90 removal equipment.

More than 90 percent of the environmental radiostrontium was removed from the milk without appreciably affecting its appearance, flavor, wholesomeness, or nutritional quality. The additional equipment required can be readily integrated into commercial milk processing operations without significant increase in processing time. The additional cost for removing radiostrontium from milk is estimated to be from one to two cents per quart depending on the daily volume of milk being processed and the extent of reuse of removal materials. The method provides a feasible and practical "standby" means for commercially processing milk in the event of a high density fallout.

23. Composition and structure of animal fats elucidated. Department chemists have developed new, unique techniques for determining the composition and structure of animal fats in minute samples of the fat. The new method is highly specific and determines the nature of the fatty structure with absolute certainty. This type of basic information, which is leading to a better understanding of fat composition and structure, is essential to further expansion of animal fat utilization in improved shortenings and confectionery uses. In addition, because these techniques are particularly adaptable to very small samples, they are now finding wide application in the biomedical field for determining the glyceride composition of fats from tissue of small experimental animals, in studies of lipid metabolism as affected by certain diseases, and in plant genetics where it permits analysis of the fat in a single seed.
24. Perspiration-resistant leather expands markets. A new tanning process, developed by Department chemists, yields leather with increased resistance to deterioration by perspiration, chemicals, and washing. The process, based on tanning with glutaraldehyde, is already in use commercially by many tanners to produce improved shoe uppers, shoe insole, garment, and glove leathers from most types of hides or skins such as cow, horse, sheep, pig, kangaroo and reptile. The process imparts other desirable properties to leather by increasing its receptivity to dyes, oils, finishes, water-repellent treatments, and other post-tanning operations. These improved properties will place leather in a better competitive position with respect to leather substitutes, thus helping to maintain profitable outlets for animal hides. Industry estimates indicate that in 1964 over 40,000,000 square feet of leather were produced by the new tanning process. The largest volume use is for work shoes, where perspiration deterioration has always been a problem, with significant amounts being used for casual and dress shoes, and for work gloves.

25. New technique aids sausage manufacturer. An analytical method has been devised by Department scientists for use in selecting meats to be manufactured into emulsion-type products such as frankfurters and bologna. The new method measures the emulsifying capacity of meats, and is useful in predicting how meats will react in emulsion-curing which is the key on costs and other factors, the new numerical measurement provides indices which yield more accurate computations of the best and most economical formulas for emulsion-based products. Use of this technique results in a more nearly optimal use of meats, as well as precision and uniformity, in sausagemaking. Several meat packers, including at least two or three major manufacturers, are using this new technique in making sausage products.
26. Rapid method developed for derermining Salmonella. The presence of Salmonella in food products and in raw materials can now be detected quickly and easily as a result of research under Department contract at Iowa State University. Other currently used assay methods for detecting Salmonella are both tedious and time consuming--complete assays requiring from three to five days. A florescent antibody technique has been applied to the development of an assay method for Salmonella that can be completed in 10 to 24 hours. The new method compares favorably with existing methods both in reliability and sensitivity, and represents another step in the drive to eliminate Salmonella from food products.
27. Tobacco utilization research reoriented and expanded. Since publication of the Report to the Surgeon General on Smoking and Health, the emphasis in utilization research on tobacco has been shifted from studies on quality factors to investigations on smoking-health relationships. An extensive program has been initiated on the isolation and identification of new leaf and smoke components which may have physiological effects. Included in this program are studies on the neutral resins of leaf and heterocyclic bases of smoke which are being conducted under contracts at the Research Triangle Institute (Durham, North Carolina) and at the University of Kentucky, respectively. An investigation is underway on the development and evaluation of new cigarette additives capable of altering the smoke composition; the Houdry Process and Chemical Company, specialists in catalysis and process alteration, are under contract for a substantial part of this research. An extensive program has been initiated under contract at the University of Kentucky Medical School to provide a biological assaying service for the analysis of experimental tobacco and smoke condensates, and to conduct basic studies to develop more rapid biological assaying methods. This reoriented program will make significant contributions in elucidating the factors responsible for the physiological effects of tobacco smoke.

28. Superior cooking oil for World Market. Department scientists have developed new laboratory methods having promise for producing a flavor-stable soybean cooking oil and at the same time preserving its high nutritional value. Of further importance is achievement of the improved stability needed to withstand storage and transportation for foreign marketing. These improved methods are based on the discovery of new catalysts that show increased selectivity in promoting hydrodenatation of linolenate, the unstable component of soybean oil. It has been demonstrated that linolenate content can be reduced to adequately low levels without the need for winterization to remove excessively hardened oil. Studies are in progress on adaptation of these new methods for use by industry. Success should expedite the role of soybeans in supplying a large share of the annual world deficit of 4 billion pounds of food fats and oils.

29. Maple sirup improved. The use of paraformaldehyde pellets in maple tree tapholes to prevent bacterial contamination and to improve the quality of the resulting maple sirup has stemmed from Department research. Furthermore, because the pellets prevent clogging of the tapholes, the sap crop can be materially increased without additional investment in capital or labor. This technique, developed cooperatively between Department scientists and the Michigan Agricultural Experiment Station, was put to a large-scale test for the first time during the 1962 maple season; by 1965 this practice had been generally adopted by the maple industry. The use of these pellets has substantially increased returns to maple producers by improvement of sirup quality and total production.

NUTRITION AND CONSUMER USE RESEARCH

Current activities: Investigations are conducted on human nutritional requirements, composition and nutritive value of foods, and problems relating to the household preparation and preservation of foods. Studies are made of problems in household utilization of textiles and clothing. Investigations are made also of food consumption practices and the nutritive value and economy of customary diets, patterns of rural family expenditures and production for household use, and economic problems of household management. With increased funds in recent years, research is being expanded on the composition and biological utilization of nutrients in wheat and on the effects of pesticides on the composition and nutritive value of the current food supply. A nationwide food consumption survey is also underway.

Selected Examples of Recent Progress:

1. Wheat found to supply protein adequate for man's needs. Recent research has given factual evidence of the value of wheat as a protein source in human diets. The findings have provided a scientific basis for planning and evaluating national food distribution programs such as Operation Head Start and the Poverty Program and international programs of food distribution. Under contract research at Michigan State University 12 healthy young men were maintained for 50 days on a controlled diet providing a moderate amount of protein (66.6 gm) per day, of which 95% was furnished by wheat and 5% by fruits and vegetables. Wheat products eaten were bread, rolls, cookies, and cake baked from commercial all-purpose flour, and a cereal. The young men remained healthy and in good physical condition and were in nitrogen balance indicating the adequacy of the diet.
2. Maternal intake of vitamin B₁ important to development of healthy offspring. Recent research has shown that consumption of an adequate diet during pregnancy may fail to correct completely for dietary inadequacies prior to pregnancy in the rat. An adequate diet prior to pregnancy also failed to protect the rat from dietary inadequacies during pregnancy. Fewer offspring, and abnormally high levels of the blood protein gamma globulin resulted when rats were subjected to a prolonged partial deficiency of thiamine (vitamin B₁) prior to pregnancy, in spite of an adequate nutrient intake during pregnancy. Abnormally high levels of gamma globulin may suggest the rallying of the body to a danger signal in metabolism. Small offspring, low thiamine content in the liver, and abnormally high values of gamma globulin in the blood of the mother were observed when thiamine intake was inadequate during pregnancy, even though the pre-pregnancy diet was adequate. The findings further support the importance of adequate nutrition prior to and during pregnancy to assure normal development of healthy young.

3. Nutritional significance of individual carbohydrates varies. Further evidence has been obtained that the metabolic response to carbohydrates may vary depending on other components in the diet and upon the inherited characteristics of the individual. For some individuals carbohydrates, often considered chiefly as a source of calories, may play a significant role in controlling various metabolic processes, including those related to the deposition of fat and cholesterol in body tissues. One strain of rats fed an experimental diet considered to be nutritionally adequate and containing sucrose as the only carbohydrate had extremely high levels of cholesterol in the blood and large amounts of fat and cholesterol in the liver. When the dietary carbohydrates was corn starch or glucose lower fat and cholesterol levels were observed. With rats of different heredity fed these same diets, cholesterol and fat levels were low and the effect of dietary carbohydrate was of questionable significance.
4. Protein constituents affect energy production in cells. Recent research suggests that an excess of the amino acid serine (a building block of protein) or one of its metabolic products may interfere with the formation of a key compound in the conversion of foods to energy in a single-cell animal. High levels of serine inhibited growth and altered the pattern and concentration of free amino acids in the organism. Addition of other amino acids, particularly alanine, arginine, aspartic acid, or glutamic acid reversed the growth inhibition and restored the normal pattern and concentration of free amino acids in the cell. These findings give insight into why nutrition may be impaired if dietary proteins and supplements provide amino acid patterns that differ markedly from requirements.
5. Some pesticides influence characteristics of food flavor.

Cooperative research has shown that flavor and eating quality of both meat and plant products may be affected by the use of pesticides during production. Rib cuts from beef animals sprayed with a pesticide used to control cattle grubs and horn flies had more off-flavor than those from untreated animals; the flavor of ground round, liver and kidney was not adversely affected. Off-Flavors in potatoes grown in soil treated with the fungicide PCNB (pentachloronitrobenzene) varied with growing location and the level of PCNB used. Off-flavors were less evident after 3 to 4 months of storage. Information from these studies is used in developing Department recommendations for use of pesticides.

6. Safety of consumer procedures for roasting stuffed turkeys evaluated. Covering the breast of turkeys during roasting slowed the rate of heat penetration in this area and increased the total cooking time needed to insure destruction of any food poisoning organisms in the stuffing. Beltsville Small White and Bronze tom turkeys weighing 13 to 16 pounds and 16 to 23 pounds respectively were studied. Breast temperatures of 195° F. at end of cooking followed by a 20 minute holding period insured microbial safety of the stuffing. Frequently recommended cooking procedures giving endpoint temperatures of 185° F. in the breast or inner thigh were not always adequate to raise the stuffing temperature to 165° F. considered necessary for microbial safety. The final temperatures of the stuffing as well as that of the turkey should be considered to assure optimum doneness and safe eating.
7. Incomes and expenditures of families on farms reported. Between 1955 and 1961 farm families increased their spending by about one-fourth. Department family economists report that in 1961 farm families spent, on the average, \$3,600 for current family living as compared with \$2,900 in 1955. When the change in price level is taken into account, the increase in real consumption is about an eighth. In spite of this increase farm families were still not spending as much as urban families. Their incomes in 1961 averaged only 74 percent of urban incomes and their spending for family living only 67 percent of urban spending. They were, however, able to save more than twice as much as urban families--\$519 compared with \$219.

These facts came from the nationwide Survey of Consumer Expenditures made cooperatively by the USDA and the U. S. Bureau of Labor Statistics. The study provides information on income, savings and expenditures for family living by families classified by their income level, family size, age of family head, education of family head, and other socio-economic characteristics of families. Five statistical publications, one for the U. S. and one for each of 4 geographic regions, and several analytical papers were released during fiscal year 1965.

8. Budgeting help provided for the young couple. To help the young couple get a sound start in managing their finances a guide to budgeting has been prepared by Department family economists. Making use of research-based information relating to patterns of expenditures for family living and the use and cost of credit, this publication describes how to develop the first budget and how to live with it. It is a consumer-oriented service of the Department. During fiscal year 1965, almost 200,000 copies of this popular Home and Garden bulletin were distributed.

9. Microbiology of drycleaning investigated. Department scientists have shown that bacteria can survive modern commercial drycleaning procedures and can be transferred from one garment to another during cleaning. In a study carried out in a modern, well-operated drycleaning plant, solvents had little or no disinfecting action though some bacteria presumably were washed out of the fabrics. Significant numbers of bacteria were redeposited on clean garments during the washing of ordinary soiled garments in drycleaning units. Various stages in the process, especially steam finishing and pressing, eliminated or markedly reduced the number of bacteria on some areas of the garments but not on protected areas such as the inside of pockets.

MARKETING RESEARCH

Current activities: Investigations are directed toward increasing marketing efficiency by reducing product losses and costs, and improving methods of quality identification and measurement through the development of solutions to problems encountered in the handling, storage, grading, and distribution of agricultural products from the farm through retail stores. The research deals with physical operations, equipment and facilities in handling, and biological and related problems associated with the evaluation, measurement, protection, maintenance, and improvement of product quality. In cooperation with public and private agencies and trade groups, it is conducted at each stage of marketing, such as at assembly points and storage facilities, in transportation, at terminals or central markets, and at wholesale and retail markets. With increased funds provided in recent years, research is being expanded to find effective insect control in stored agricultural products without harmful residues, to solve quality maintenance, evaluation and physical handling problems in marketing fruits and vegetables, wheat, cotton, beef and other commodities, and to conduct research on health related problems of tobacco and studies of deleterious molds.

Selected Examples of Recent Progress

Market Quality Research

1. Effect of various factors on moisture absorption, retention and loss by fryer chickens determined. Information has been acquired on factors which contribute to the pickup, retention and loss of moisture during commercial processing, transportation and storage of ready-to-cook poultry. Absorption, retention and loss of moisture from chicken fryers during chilling was found to be influenced by (a) type of cuts used during evisceration, (b) temperature of prechilling, (c) time of prechilling, (d) carcass weight, (e) washing, (f) removal of neck before chilling, (g) time of vat chilling, (h) type of chilling system, (i) phosphates added to chill water, (j) NaCl added to chill water, (k) initial pH of chill water, (l) air agitation in chiller, and (m) combination of continuous chilling with subsequent phosphate soak.

These findings were utilized in promulgating many new regulations which defined procedures and tolerances related to moisture added or lost during processing and marketing of poultry. These findings are also available to the poultry processing industry through government, technical and trade journal publications. They assist the processor in determining the effect on product moisture of modifications in techniques or equipment.

2. Certain sound waves found to affect reproduction of beetles. In preliminary studies last year a significant achievement was the discovery that certain sound waves would reduce reproduction of the Indianmeal moth as much as 75 percent. This lead was pursued further and it has been found that sound has an even greater

effect on one of the flour beetles. This beetle is another important pest of stored products. The new finding is important because there are many kinds of beetles that are pests, and they belong to an entirely different group of insects than the moths. This discovery is being explored further to determine whether it may be developed into a practical control measure.

3. Effect of various disease syndromes on wholesomeness of market poultry determined. In a study conducted under contract at the School of Veterinary Medicine, University of California, Davis, California, it was shown that there is considerable variation in the effect of different disease agents and combinations of agents on the wholesomeness of market age chickens and turkeys, particularly with respect to the airsacculitis syndrome. In some combinations there was rather close correlation between symptoms, lesions and terminal wholesomeness, but not always. Some combinations and times of inoculation resulted in severe diseases but when such birds were held until normal slaughter age a high degree of resolution of lesions took place. Employing certain other combinations of agents, the development of lesions was slowly progressive resulting in a greater condemnation the longer the birds were held. One of the more significant findings was the isolation of Erysipelothrix insidiosa at terminal market age from ten percent to turkeys inoculated with this agent although no birds contained sufficient lesions for condemnation. The infectivity of this agent for humans is well documented and emphasizes the importance of this finding. Basic information obtained under this study is being used by the Inspection Branch, Poultry Division, Consumer and Marketing Service, in establishing criteria for inspection of wholesomeness of market poultry.
4. Kernel count as a measure of flour milling yield evaluated. A quick counting test using an electronic wheat-kernel counter was found to be an accurate indicator of flour yield when corrected to a common moisture basis. This research indicated that the number-of-kernels-per-unit weight is a more accurate evaluation of the farmers' wheat than test weight. Two large flour mills are currently using this quick method for estimating flour milling yield.
5. New insect-resistant packages do well under commercial conditions. Insect-resistant multiwall paper bags kept cornmeal free of insect infestation all the way from a mill in the United States to the port of destination in Brazil. The new bags incorporated a repellant treatment on the outside with improved construction and closure features developed through research. Cornmeal in conventional bags accompanied the test shipment. It became infested and had to be fumigated before loading on the ship to leave the United States. Upon arrival in Brazil after three weeks in transit, the meal in over half of the conventional bags had again become insect-infested. The test was carried out in

cooperation between USDA, the coordinator, and the American Corn Millers Federation, and the Food for Peace program. United States aid activities, and industry products have suffered because of insect infestation present in food when it is distributed in foreign countries. The new packages provide a means for correcting these adverse effects, preventing the loss of needed food, and getting clean wholesome products to the intended recipients.

6. Tristimulus computer developed for improvement of color measurements in research. An automatic tristimulus computer has been developed for the color-measuring spectrophotometer. This computer determines the color values for a sample as the spectral reflectance curve is scanned by the spectrophotometer, thus eliminating the time-consuming task of transcribing the data and calculating the color values with a desk calculator. Use of this computer will permit research workers to make many more color measurements on their samples and obtain a more complete documentation of results.
7. Smut contamination test developed. A rapid, economical method for testing smut in wheat was developed. It employs a quaternary ammonium salt solution (Roccal) which is added to a smut-water suspension in a graduated centrifuge tube. Spore sedimentation is complete in ten minutes and the volume can be read directly from the graduated tube. The sedimentation test is now being used by the Board of Appeals and Review, Grain Divisions, Consumer and Marketing Service, to test borderline cases.
8. Improved marketing practices developed for sweetpotatoes, bell peppers, and cranberries.

Sweetpotato. Research conducted in cooperation with the North Carolina State Experiment Station has substantially improved handling practices and storage facilities, and reduced decay of sweetpotatoes in the markets. This has been accomplished through introduction of palletized-crate handling for harvest, curing and storage; adaptation of thermostatically-controlled ventilation and air circulation systems for cooling in storage and floor trench heating systems for prevention of chilling injury; and development of post-storage fungicidal treatments for reduction of decay during transit and terminal marketing.

Soft rot in bell peppers. Research conducted in Texas has developed important information on the origin and control of soft rot which causes substantial losses from decay during each marketing season. In the course of studies to develop decay control treatments, research showed that commercially-waxed peppers developed several times as much soft rot during subsequent moldings as unwaxed peppers. Further investigations proved that contaminated brushes

in the waxer were spreading soft rot inoculum to originally non-infected peppers. The research demonstrated the frequent disinfection of the brushes with chlorine solution would greatly reduce decay. Other factors contributing to postharvest decay were broken stems, contaminated hydrocoolers, and high water content of the pod tissues. These findings are now being applied in the South Texas pepper industry and are directly applicable to all vegetables in which losses occur from bacterial soft rot.

Storage of cranberries. Before 1960 Massachusetts grown cranberries were stored in ventilated common storages on or near the farm. Outside temperatures are high during the September harvest and often many weeks elapsed before the stored berries were cooled to the desired temperature of 40° F. Research has proved that market quality is improved, decay reduced, and subsequent shelf life prolonged by storage of the berries immediately after harvest in refrigerated cold storage as compared with common storage. Some 75,000 barrels of fresh cranberries were placed in refrigerated cold storage during the past season, despite the fact that a greater amount of berries are now being used as processed products.

9. Storage of carnations extended. The storage life of carnations was extended to 4 to 5 weeks by holding the flowers at 36° F. in an atmosphere of 0.5% oxygen with the balance nitrogen. Accumulation of up to 5% CO₂ has not been harmful or beneficial. Flower color and vase life are retained well and Botrytis decay reduced in this modified atmosphere. Commercial application of this finding in California has been profitable because it enables accumulation of carnations to meet the peak demands which are characteristic of the cut flower industry.

Transportation and Facilities Research

10. Improved marketing facilities. Studies for the development of plans for new marketing facilities and determining their economic feasibility have recently been completed in Boston, San Juan, Pittsburgh, Milwaukee, Montgomery, and Springfield, Mass. Studies currently underway include Chicago, Baltimore, Huntington, Dayton, and Honolulu. Requests from cities and states for technical assistance in planning new markets have grown and continue to grow as existing markets become more obsolete and in the way of urban renewal projects. These new markets will provide orderly and efficient facilities for receiving, handling, and distributing food at the least possible cost and in the best possible condition. Both farmers and consumers benefit from this increased efficiency.

Work continues to help use these new marketing facilities properly so as to realize fully the potential benefits they afford. Workshops were held in New York City to help food wholesalers plan for better operations at Hunts Point. Many dealers who will be moving to the new multi-million dollar food wholesale terminal early in 1966 attended the workshops where guidelines and ideas on proper plant layouts, handling methods and equipment, and refrigeration were presented. Pilot examples were developed to demonstrate what can be done to take advantage of properly designed facilities. By using the proper operating methods in the modern Hunts Point facilities, \$25 million per year should be saved in food handling costs.

During the past year more than 70 studies were made to improve facilities for assembling, processing and packaging food for movement to the city. One of these studies will directly affect 70 percent of the ducks marketed in the United States. Two Long Island duck processing plants, where most of the nation's ready-to-cook ducks originate, were studied to develop an improved processing system. Findings indicate that over \$200,000 can be saved each year with limited capital investment.

11. Automation of Livestock Auction Markets. Electrically operated gates that speed up handling of livestock through the sales ring and reduce labor requirements for the selling operation are being tested under market conditions at a livestock auction market. The gates were installed after laboratory-type tests under a cooperative agreement with the Missouri Agricultural Experiment Station. The gates, installed at both the entrance and exit of the sales ring, are remotely controlled by the ringmaster or "starter" from a permanent station in the sales arena. Market tests indicate that use of these gates make it possible to conduct the selling operation with only 2 men instead of the 4 to 5 men normally used. In addition, the speed of the selling cycle can be increased. Owners of the market, after observing the initial tests, are planning to equip a new hog sales ring, now under construction, with gates of the same type. Also under development is an automatic device to drive animals to, and pen them in, buyers' pens following each sale.
12. New corn drying process developed. A new corn drying process--called dryeration--has been developed that not only reduces the drying damage to shelled corn, but also increases materially the drying capacity of conventional commercial dryers. The new process, combining aeration and heated air drying, permits the use of higher drying-air temperatures and eliminates cooling in the dryer while producing dry corn with minimum damage. The dryeration process in its first year of application was used to dry several million bushels of the 1964 corn crop. Cooperators report increases in drying capacity of from 40 to 80 percent,

reductions in fuel and power costs, and cooler corn of better quality than they had experienced with conventional drying. The demand for information on the dryeration process has resulted in articles in nearly all of the leading farm magazines and grain trade journals. Information on the process was presented to about 20 groups in regional and national meetings held during the year.

13. Overseas transportation of fresh beef improved. To be able to sell U. S. beef in foreign markets adequate, low cost transportation is essential. Since very little American fresh beef has been moving to European markets, U. S. ships are not equipped with rails for handling it. To solve this problem a new demountable and reusable rack system was devised and tested for hanging beef in the hold of a ship that makes it possible to load 40 percent more beef in the space and transport it with less damage than with the conventional floor-stacked method. Also since refrigerated space is limited, experiments were successfully completed in shipping beef in unrefrigerated space by hanging it in large refrigerated containers at the packing plant and moving these containers, in which proper temperature can be maintained by connecting with the ship's electrical current, directly to the foreign distributor without opening the container. By such methods as these we are attempting to expand foreign markets for U. S. farm products.
14. Fruits and vegetables precooled with cold air. From basic research it was found that cold air could be used in precooling fruits and vegetables without damaging the quality of the product so long as the surface temperature did not go below the freezing temperature of the product being cooled. Using air colder than the freezing point of the product provided the "breakthrough" which was needed to make forced-air cooling competitive with hydrocooling. As some fruits and vegetables which need precooling cannot be hydrocooled without injury, forced-air now appears to be the answer. Because the experimental results with forced-air cooling seemed promising, an experimental commercial-scale portable forced-air cooler was designed and constructed. This unit, which has been tested with citrus fruit, peaches, string beans, butter beans, and sweet corn, showed good potential for all items tested except sweet corn. Based on preliminary analysis, it appears that the cost of electricity for forced-air cooling is about equal to the cost of hydrocooling on a unit weight basis.
15. Methods to reduce bruises in handling live chickens improved. In research on the development of improved methods and equipment for handling live chickens by commercial poultry processing plants in cooperation with the University of Georgia, it was found in some plants that as many as 35 percent of the total birds received had to be downgraded because of bruises sustained in driving, catching, cooping, transporting, and unloading. The average was between 15 and 20 percent of all birds processed. It was determined that a

monetary loss of one dollar per 1,000 birds processed is sustained for each one percent in downgrades, not including meat loss. Accordingly, a plant processing 60,000 birds per day with a 20 percent downgrade, sustains a daily loss of \$1,200. Preliminary findings in the study indicate that 60 to 70 percent of the bruising occurs during the driving, catching and cooping operations. Through study of bruise type and location and observations in the broiler houses it was found that this rate could be reduced 25 percent by proper house preparation before driving; that is, removing feeders, water fountains, padding sharp corners of the structure and removing protruding objects such as nails and wire. Tests of a plastic coop show that a further 2 to 3 percent reduction can be brought about by coop improvement. Further reductions also are expected as an analysis of catching methods now underway progresses.

16. New peach containers reduce marketing costs. New combination fiberboard and veneer wirebound 3/4-bushel boxes for peaches cost 12 cents less, including cost of labor to pack them, than the 3/4-bushel veneer baskets. By using these containers bruising of the fruit was reduced from 12 percent in baskets to less than 6 percent. Peach shippers in the Eastern States are shifting from veneer baskets to the new jumble-packed boxes. It is estimated that \$3.5 million will be saved in 1965 because 75 percent of eastern-grown peaches are being shipped in these new containers.

COORDINATION OF DEPARTMENTAL AND INTERDEPARTMENTAL
ACTIVITIES RELATED TO PESTS AND THEIR CONTROL

Current Activities: The 1966 appropriation provided \$250,000 to the Secretary of Agriculture for use in coordinating departmental research, regulatory, control, education and information programs on pests and their control with related programs conducted by the Departments of Interior, Health, Education and Welfare, Defense, and other departments and agencies of the Federal government, and with State and industrial organizations. The objectives are to provide departmental and interdepartmental coordination of research, regulatory, control, education and information programs designed to develop effective and safe methods of pest control which will protect the public health, producers, wildlife, and the natural resources of the nation.

Departmental and interdepartmental coordination are being accomplished in many ways. Task forces, committees, and working groups have been appointed and other mechanisms have been employed utilizing technical competence, suggestions and leadership of the Department of Agriculture, other Federal Departments, States, and industry.

Selected Examples of Recent Progress:

1. This Department and the Department of Health, Education and Welfare requested the National Academy of Sciences, National Research Council to conduct a study of the scientific principles involved in the registration of pesticidal chemicals on a "zero tolerance" or "no residue" basis. A Pesticide Residues Committee appointed by the Academy, made a thorough study and analysis of pesticide tolerance procedures and summarized their findings in a report issued June 1965. The report and recommendations of this study have been reviewed by this Department and the Department of Health, Education and Welfare. Mutual agreement has been reached on certain general principles and procedures to follow in implementing the recommendations of the report.
2. Progress is being made in establishing procedures for the review of news releases, reports, and other publications by one department that is of interest to and that would affect programs being carried out by other Federal departments. The Federal Committee on Pest Control established an Information and Education Subcommittee which has been charged with the review of research, regulatory, education and information publications and publications resulting from such investigations to bring about coordination and understanding in this area. Liaison has been established through a Research Subcommittee with research scientists in the Departments of Interior, Health, Education and Welfare, and Defense and procedures for the exchange of research plans, reports and other information of mutual interest on pests and their control are being developed.

3. An interagency symposium on the Scientific Aspects of Pest Control under contract with the National Academy of Sciences - National Research Council has been developed and scheduled for the last of January 1966. Scientists of many disciplines, educators, administrators and others from State, Federal and private organizations will participate in the symposium in an effort to improve communications, coordination, and cooperation of programs on pests and their control to create better public understanding of pest control by chemical and nonchemical means.
4. Public information programs are underway on the safe and effective use of pesticides including publications, radio, and TV programs to create a better public understanding of pests and their control conducted by this Department and by the Departments of Interior and Health, Education and Welfare and the cooperating States. A series of six films to improve public understanding of the economic importance of pests and their control and to describe some of the techniques used effectively and safely are being developed. The first of the series, a 13-minute color **film** entitled, "Pests or Plenty," has been completed and distributed to **film** libraries throughout the country and has been widely used. The second, a 28-minute color film illustrating all aspects of pests and their control will be completed near the end of the 1966 growing season. In addition, four five minute special subject, black and white films on pests will be available for distribution in the fall of 1966.
5. A contract has been negotiated with the National Academy of Sciences - National Research Council for the preparation and publication of seven manuals on the basic principles of pest control. Two of these are scheduled for completion in the fall of 1966 and the remaining by the fall of 1967.
6. An in-depth study of the relationships between agricultural practices and the production and protection of wildlife and the conservation of natural resources is being conducted under contract with the National Academy of Sciences - National Research Council. This study in cooperation with the Departments of Interior and Health, Education and Welfare is designed to separate facts from unsupported theories as to the beneficial and detrimental effects related to the use of pesticides and other agricultural practices.
7. Cooperation with State Agencies.
 - a. Charters for suggested model State Pest Control Committees were developed and reviewed within the Department and by the Departments of Interior and Health, Education and Welfare. The purpose of the proposed pest control committees is to provide State mechanisms for the coordination of multidiscipline and interagency research, regulatory, education, control and information programs on pests and their control, as is being done among Federal agencies.

- b. Twenty-two States have organized interagency committees for coordinating programs on pests and their control. Twenty-seven State universities have committees for the coordination of pesticide activities. Ten States have both interagency and university committees while 11 States do not have any committees for coordination of pesticide activities. Additional efforts will be made to strengthen pesticide coordination mechanisms in the States.
- c. Action was initiated with the Council of State Governments in the development of a uniform:
 - (1) Act concerning the safe use of pesticides
 - (2) A proposed uniform State Noxious Weed Control Law.

These have been adopted by the Subcommittees on Scope and Agenda of the Council of State Governments and are being recommended by that group for enactment by the different States.

CONSTRUCTION OF FACILITIES

The status of uncompleted research facilities authorized under three appropriations since fiscal year 1962 (Construction of Facilities, 1962; Removal of Surplus Commodities (Section 32), 1964 and 1965; and Salaries and Expenses, 1963, 1964 (including transfer of CCC funds), 1965 and 1966 are as follows:

<u>Item</u>	<u>Amount Provided</u>	<u>Construction Status</u>
<u>Fiscal Year 1962 (Construction of Facilities)</u>		
<u>Columbia, Missouri</u>		
Research on biological control of insects (parasites, predat- ors, and diseases)	\$425,000	Readvertisement necessary as first bids exceeded funds available. Opening of new bids scheduled for January 20, 1966; construction ex- pected to be completed by March, 1967.
<u>Fiscal Year 1963 (Salaries and Expenses)</u>		
<u>Tucson, Arizona</u>		
Entomology, crops and related agricultural engineering research	585,000	Construction contract awarded August 1965. Com- pletion scheduled for November 1966.
<u>Byron, Georgia</u>		
Regional tree fruit and nut crop research	500,000	Diagrammatic drawings ex- pected from architect in January 1966. Construc- tion contract anticipated late 1966 and estimated completion in late 1967.
<u>East Lansing, Michigan</u>		
Research on avian leukosis.....	450,000	New site being obtained and Congressional Committees so advised. Architect- engineer contract to be renegotiated. Present Federal land and facilities to be exchanged with the University of Michigan for the new site; the University also to provide \$397,000 which, together with Federal funds of \$450,000, will make a total of \$847,000 available for new facility.

<u>Item</u>	<u>Amount Provided</u>	<u>Construction Status</u>
<u>Fiscal Year 1963 (con't)</u>		
<u>Mandan, North Dakota</u>		
Soil and water conservation research	400,000	Under construction. To be completed late in fiscal year 1966.
<u>Fiscal Year 1964 (Section 32 funds and transfer of CCC funds)</u>		
<u>Farm and Marketing Research</u>		
<u>Stoneville, Mississippi</u>		
Cotton ginning research	250,000	Under construction. Com= pletion scheduled for March 1966.
Weed control research	1,500,000	Architect-engineer contract awarded. Being planned in conjunction with facilities for pesticides research and chemical analysis and cotton physiology research author= ized in Fiscal Year 1965. Diagrammatic drawings for combined building received in December 1965.
<u>Utilization Research and Development</u>		
Albany, California	1,500,000	Bid invitations expected to be issued in April 1966. Estimated completion date June 1967.
Athens, Georgia	9,500,000	Bid invitations for con= struction expected to be issued February 1966. Estimated completion date December 1967.
Olustee, Florida (naval stores)..	250,000	Construction contract awarded in December 1965. Estimated completion date September 1966.
Peoria, Illinois	4,500,000	Construction contract ex= pected to be awarded in March 1966. Estimated completion date December 1967.

<u>Item</u>	<u>Amount Provided</u>	<u>Construction Status</u>
<u>Utilization Research (con't)</u>		
New Orleans, Louisiana	1,500,000	Construction contract expected to be awarded in January 1966. Estimated completion date March 1967.
Wyndmoor, Pennsylvania	1,500,000	Construction contract expected to be awarded in January 1966. Estimated completion date February 1967.
Weslaco, Texas (fruit and vegetables)	250,000	Construction contract expected to be awarded in January 1966. Estimated completion date September 1966.
Survey, determination of additional research facilities as may be required for utilization research in the Southeast, and weed control research	250,000	See Athens, Georgia, above; and Stoneville, Mississippi under Farm and Marketing Research, fiscal year 1964.

Fiscal Year 1965

Facilities (Salaries and Expenses and Section 32 funds)

Fort Collins, Colorado

Sugarbeet, pasture and range research 1,000,000

Architect-engineer contract awarded. Completion expected in December 1967.

Dawson, Georgia

Peanut marketing research 1,000,000

Architect-engineer contract awarded. Completion of construction expected in September 1967.

Savannah, Georgia

Research on insect control in agricultural products 800,000

Architect-engineer contract awarded. Completion of construction expected early in fiscal year 1968.

Beltsville, Maryland

Construction and modernization of facilities 850,000

Advertisement of farm headquarters building scheduled for January 1966 and completion in January 1967. Other items are completed or will be completed by the spring of 1966.

<u>Item</u> <u>Facilities (con't)</u>	<u>Amount</u> <u>Provided</u>	<u>Construction Status</u>
<u>Oxford, North Carolina</u> Research on flue-cured tobacco	500,000	Architect-engineer contract awarded. Completion expected in October 1967.
<u>Planning funds only (Salaries and Expenses)</u>		
<u>Phoenix (formerly listed as Tempe), Arizona</u> Research on control of western insects and cotton physiology (photoperiodism) -- construction funds of \$1,150,000 appropriated in 1966	100,000	Architect-engineer contract awarded. Completion estimated for early calendar year 1968.
<u>Gainesville, Florida</u> Research on insect attractants and environmental research on stored products insects -- construction funds of \$1,840,000 appropriated in 1966	160,000	Architect-engineer contract awarded. Completion expected early in calendar year 1968.
<u>Beltsville, Maryland</u> Research on plant diseases, nematodes, and insects (\$338,000) and pesticides registration activities (\$100,000)	438,000	Architect-engineer contracts awarded. No funds for construction appropriated in 1966 although recommended in the 1966 Budget Estimates.
<u>Stoneville, Mississippi</u> Pesticides research and chemical analyses in connection with monitoring use of pesticides \$136,000--construction funds of \$1,564,000 appropriated in 1966.		Architect-engineer contract awarded. Being planned in conjunction with cotton physiology research facilities (listed below) and weed laboratory authorized in 1964. Diagrammatic drawings for combined building received in December 1965.
Cotton physiology research (growth and fruiting)--construction funds of \$506,000 appropriated in 1966	44,000	See above

<u>Item</u> <u>Planning of funds only</u> (Salaries and Expenses) (con't) <u>Stoneville, Mississippi (cont.)</u>	<u>Amount</u> <u>Provided</u>	<u>Construction Status</u>
Cotton ginning research -- construction funds of \$92,000 appropriated in 1966	8,000	Architect-engineer contract awarded. Construction contract expected to be awarded in June 1966, and completion expected in April 1967.
<u>Mesilla Park, New Mexico</u>		
Cotton ginning research -- construction funds of \$92,000 appropriated in 1966	8,000	Construction contract expected to be awarded in March 1966. Completion of facilities expected in January 1967.
<u>College Station, Texas</u>		
Research on control of livestock insects and on toxicological and pathological effects of pesticides on livestock--construction funds of \$2,990,000 appropriated in 1966	260,000	Architect-engineer contract awarded. Being planned in conjunction with cotton disease research facility listed below. Estimated completion in December 1968.
Research on cotton diseases--construction funds of \$644,000 appropriated in 1966	56,000	See above
<u>Lubbock, Texas</u>		
Research on cotton ginning and storage prior to ginning--construction funds of \$276,000 appropriated in 1966	24,000	Architect-engineer contract expected in February 1966. Estimated completion in June 1967.
<u>Fiscal Year 1966 (Salaries and Expenses)</u>		
<u>Construction funds for which planning funds were provided in 1965.</u>		
<u>Arizona, Phoenix (formerly listed as Tempe)</u>		
Research on control of western insects and cotton physiology (photoperiodism)	1,150,000	See fiscal year 1965 for construction status of this building.

<u>Item</u>	<u>Amount</u>	<u>Construction Status</u>
<u>Construction funds for which planning</u>	<u>Provided</u>	
<u>funds were provided in 1965 (con't)</u>		
<u>Florida, Gainesville</u>		
Research on insect attractants and environmental research on stored products insects	1,840,000	See fiscal year 1965 for construction status of this building.
<u>Mississippi, Stoneville</u>		
Pesticides research and chemical analysis in connection with monitoring use of pesticides ...	1,564,000	do
Cotton physiology research (growth and fruiting).....	506,000	do
Cotton ginning research	92,000	do
<u>New Mexico, Mesilla Park</u>		
Cotton ginning research	92,000	do
<u>Texas, College Station</u>		
Research on livestock insects and on toxicological and pathological effects of pesticides on livestock	2,990,000	do
Research on cotton diseases ..	644,000	do
<u>Texas, Lubbock</u>		
Research on cotton ginning and storage prior to ginning	276,000	do
<u>New authorizations for construction</u>		
<u>Delaware, Georgetown</u>		
Poultry research	500,000	Architect-engineer contract expected to be awarded in February 1966. Completion estimated in late fall 1967.
<u>Maryland, Beltsville</u>		
Construction, alteration and improvement of facilities at Agricultural Research Center...	339,000	Under construction during fiscal year 1966.
<u>Oklahoma, Durant</u>		
Water pollution research	500,000	Architect-engineer contract expected to be awarded in January 1966. Estimated completion in fall of 1967.

<u>Item</u> <u>Planning funds only</u>	<u>Amount</u> <u>Provided</u>	<u>Construction Status</u>
<u>Kansas, Manhattan</u>		
Grain marketing research (total cost including plans \$3,385,000)	225,000	Design criteria sent to GSA for approval. Architect-engineer expected to complete design in spring of 1967.
<u>Minnesota, St. Paul</u>		
Cereal rust research. (total cost including plans, \$650,000)	50,000	Design criteria sent to GSA in December 1965 for approval. Architect-engineer expected to complete design in late fall 1966.
<u>Mississippi, Oxford</u>		
Addition to National Sedimentation Laboratory, (total cost including plans, \$1,035,000)	100,000	Design criteria sent to GSA for approval. Architect-engineer expected to complete design in spring 1967.
<u>Montana, Miles City</u>		
Range livestock research. (total cost including plans, \$521,000)	40,000	Design criteria sent to GSA for approval. Architect-engineer contract expected to be awarded in February 1966. The 1967 Budget Estimates propose an increase of \$267,000 for a part of this project (laboratory-office building and replacement of one residence building which burned to the ground in November 1965).
<u>Nebraska, Clay Center</u>		
Meat animal research. (total cost of construction including plans, \$3,750,000)	300,000	Design criteria being prepared to send to GSA. The 1967 Budget Estimates propose an increase of \$1,370,000 for a part of the construction (laboratory-office building and utilities).
<u>North Dakota, Grand Forks</u>		
Nutrition and consumer use research. (total cost including plans, \$633,000)	50,000	Design criteria being prepared for GSA approval.

<u>Item</u>	<u>Amount Provided</u>	<u>Construction Status</u>
<u>Planning funds only (con't)</u>		
<u>Oregon, Pendleton</u>		
Soil and water research. (Total cost including plans, \$425,000)...	45,000	Design criteria sent to GSA for approval. Architect-engineer expected to complete design in fall of 1966.
<u>Pennsylvania, University Park</u>		
Pasture research. (Total cost including plans, \$400,000).	40,000	Delay in preparing criteria pending negotiation relative to possible purchase of present building by University and donation of new location.
<u>Texas, Bushland</u>		
Soil and water conservation research. (Total cost including plans, \$350,000)	25,000	Criteria sent to GSA for approval. Architect-engineer expected to complete design in fall of 1966.
<u>Wisconsin, Madison</u>		
Barley malt research (allocation from contingency research fund)...	30,000	Completion of design criteria expected in early January 1966 for awarding architect-engineer contract by GSA.
<u>Location not decided</u>		
Bee stock center research (allocation from contingency research fund)	9,000	Design criteria being prepared by ARS to award architect-engineer contract.

Contingency Research Fund

The Contingency Research Fund, established by Congress in fiscal year 1962, is designed to provide a ready source of funds for unforeseen and immediate research needs. Releases from the fund are generally made in situations where an emergency need exists, or for special needs such as an unexpected scientific "breakthrough", or for a new disease or pest problem where it appears inadvisable to wait for consideration of a request for funds for the project in the regular budget process. In allocating funds, the procedure is ordinarily to make no commitments for allocations from the fund beyond the current year.

In fiscal year 1965, releases from the Contingency Research Fund were made for the following purposes:

Animal husbandry research:

F. Y. 1965

Studies on the rumen metabolism of calcium and strontium. The work involved two aspects of the qualitative relationship in the ruminant metabolism of calcium and strontium. One aspect included the study of genetic factors and the other the effect of sugars on absorption of these minerals in the ruminant \$32,235

Studies on the dysfunctions in uterine physiology to determine the cause for the high rate of embryo death in dairy cattle 10,524

Research on pesticide residue in dairy cattle at Michigan State University. Studies will be conducted to find methods for expediting the removal of dieldrin and DDT from the cow or preventing their excretion in milk (Research contract) 49,934 \$92,693

Animal disease and parasite research:

For more intensive investigations of bovine leukosis in cooperation with State and other research workers. Expanded cooperative activities include efforts to determine the presence or lack of a causative agent, better diagnostic techniques, and expanded field investigations to determine incidence of the disease to be conducted by experienced animal disease control officials 400,000

Although excellent progress has been made on research on piroplasmosis of horses, this problem is regarded as of sufficient urgency and of overall significance to warranted continuation and expansion of the current program..... 41,846

Research to identify the cause or causes of the calf scours syndrome which has resulted in losses of several million dollars annually to the cattle industry, particularly in the Northwestern States. Special emphasis is being aimed on transmission studies with agents found to be associated with the syndrome (Research contract)..... 158,814 600,660

Crops research:

Research on witchweed in North Carolina to isolate and identify the witchweed germination stimulant, thereby accelerating the effort toward eradication by synthetically germinating the witchweed seed in the soil..... 29,732

Transfer of breeding, genetic and pathological research on lettuce and muskmelons from La Jolla, California to the University of California, and to provide greenhouse facilities at the new location..... 49,995 79,727

Agricultural engineering research:

To provide needed alterations for air conditioning and partitioning of headhouse-greenhouse to be constructed at Beltsville, Maryland for engineering research on plant growth structures..... 15,882

Entomology research:

Continuing research in Hawaii on the southern green stink bug, which has become a serious pest of a wide variety of fruits and vegetables, ornamental plants, etc. Large numbers of the eggs and adults of the stink bug are needed for laboratory rearing of parasites for field release as a means of controlling the pest..... 34,912

Continuation of research on the biology
and control of the dog fly in the Gulf
Coast area of northwestern Florida to
find methods of control that are more
economical and more effective than the
present spraying of beach grasses with
DDT \$23,134

Research on transmission of equine prioro-
plasmosis and on the development of
insecticides and other means of controlling
ticks and other vectors of the disease ... 3,906 61,952

Soil and water conservation research:

Purchase of scientific equipment to intensify
studies in the use of photogrammetry and
remote sensing of the moisture and salinity
status of plants and soils 49,981

Human nutrition research:

Purchase of automated analyzers for nitrogen
compounds. Automated equipment is needed to
separate and measure compounds giving a
visible color reaction and to separate by
column chromatography, monitor and measure
the spectra of compounds in the ultra violet
region of the spectrum 38,082

Utilization research and development:

Purchase of scientific equipment to intensify
planned in-house research on health related
problems of tobacco in Kentucky 10,168

Total 1965 obligations, Contingency Research
Fund

949,145

Current activities. By December 31, 1965 a total of \$933,600 was approved for release from the Contingency Research Fund in fiscal year 1966 to meet a variety of research needs, leaving a balance of \$66,400.

F.Y. 1966

Animal husbandry research:

For research to determine whether certain contaminants in feeds are transmitted to milk, the level of contamination, and whether the feeding of ingested milk affects growth and development of young animals. (Part of cooperative research with Western Utilization Research and Development and Food and Drug Administration) \$50,000

Replacement of makeshift and obsolete fur animal research facilities at Ithaca, New York, land to be donated by Cornell University. The facility will include special feed preparation equipment and refrigerated storage space..... 45,000

Conversion of space in dairy laboratory building at Beltsville into laboratories needed for research on physiology of reproduction in cattle. 26,000

For research on ruminant metabolism of radioactive contaminants such as strontium and cesium--one at Beltsville, Maryland on effect of genetic factors on the deposition and removal of strontium from tissue of the cow; the other on effect of physiological factors in cooperation with Cornell University. 50,000 \$171,000

Animal disease and parasite research:

For research at the University of Minnesota on the etiology, diagnosis, methods of transmission, and control by therapeutic agents, of bluecomb disease of turkeys which have caused heavy losses to turkey growers in the Midwest. (research contract). The Congressional Committees directed the Department to undertake further research on this problem 90,000

F.Y. 1966

Animal disease and parasite research - Cont.

For research at the University of Florida Agricultural Experiment Station on equine equine piroplasmosis. Primary objectives of the work are to develop a serological diagnostic test to identify "carrier" animals, and to make studies on numerous other aspects of the disease such as transmission, vector, immunization, and treatments. The Senate directed con- tinuation of the research at the 1965 level. (\$100,000, of which \$46,000 was from this fund.)	46,000	
For research at Michigan State University on tuberculosis in cattle to develop an <u>in Vitro</u> cytotoxic tests for determining tuberculin sensitivity. (research contract)	60,000	
For a cooperative agreement with the Veterinary College, University of Minnesota for research on salmonella of turkeys	<u>30,000</u>	\$226,000

Crops research:

For acceleration of research on the maize dwarf mosaic disease affecting the northern Corn Belt. A cooperative program will be undertaken with the Ohio Agricultural Experiment Station to expand work presently underway on the maize dwarf mosaic virus disease. The release will provide for construction of a greenhouse. The Congres- sional Committee directed the Department to allocate funds in the amount of \$100,000 for the above project	100,000	
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------	--

F.Y. 1966

Crops research - Cont.

Preparation of plans for enlarging the existing facilities at the National Barley and Malt Laboratory, Madison, Wisconsin. The additional space is needed for processing and quality evaluation work of new selections and varieties of barley. Congress directed that plans be made for construction of this facility at an estimated cost of \$375,000 including plans 30,000

For acceleration of research on stubborn disease affecting citrus production to obtain basic information on method of spread and better methods of diagnosis. Regular funds are being used for expanding greenhouse facilities for this research at Indio, California and for professional and supporting help with release of research contingency funds. The Senate requested that the need for research on stubborn disease of citrus be considered 40,000 170,000

Entomology research:

Pilot investigations on control of boll weevil to determine the efficacy of control measures when applied to an entire cotton acreage in the Presidio-ojinaga area of Texas. This release is in addition to research funds being used for the boll weevil pilot program in cooperation with Plant Pest Control Division and other cooperators 50,000

For preparations and plans for construction for bee breeding stock center laboratory. The House requested that consideration be given to the need for this laboratory.. 9,000 59,000

F.Y. 1966

Soil and water conservation research:

For studies on possible mechanisms of pollution of streams and subsurface water supplies with nitrate and other nitrogen compounds used by or resulting from agriculture in the South Platte Valley	41,300
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------

Agricultural engineering research:

Purchase of special instrumentation to intensify agricultural engineering research related to the movement and control of fine particles as experienced in minute applications of pesticides .	10,000	
Purchase and installation of two growth structures for studying new lamp designs and their effects on plant development to further basic research in the development of experimental plant growth structures	<u>30,000</u>	40,000

Research at Western Utilization Laboratory:

For dairy and beef cattle feeding trials to determine whether certain contaminants are transmitted through feeds into meat, milk and eggs. (Part cooperative research with Animal Husbandry and Food and Drug Administration.)	26,300	
For investigations on methods for processing dates which have been harvested mechanically, including new techniques for handling fruit of varying maturity. The Department was requested by Congressional Committees to assist the date industry in this problem ...	<u>40,000</u>	66,300

F.Y. 1966

Market quality research:

For research to develop effective and rapid techniques for identifying meat slaughtered by approved methods from meat obtained from animals that have died from other causes; and to develop a method for the identification of the species from which raw and cooked boned meat products have originated (research contract) 150,000

For a cooperative agreement with the Oregon Experiment Station for research to define more clearly the cause of abnormality in maturity and storage behavior of pears and apples grown in the Hood River Valley, Oregon; and to develop harvesting dates and handling methods to avoid losses due to this problem. The Oregon State University has allocated \$49,500 and the Hood River Traffic Association has allocated \$41,500 for a four year period. The Senate requested that this amount be allocated to this problem 10,000 160,000

Total 1966 releases from Contingency
Research Fund as of December 31, 1965 933,600

PLANT AND ANIMAL DISEASE AND PEST CONTROL

PLANT DISEASE AND PEST CONTROL

Current Activities: Insect and plant disease control, eradication, and regulatory programs designed to protect agriculture from destructive insects, nematodes, and plant diseases are conducted in cooperation with State and local agencies, and for certain programs in cooperation with the Republic of Mexico and Dominion of Canada. The work includes surveys and inspections to detect and appraise infestations, conduct of eradication and control activities, and regulatory action to prevent interstate spread of infestations to uninfested areas.

Inspection and regulatory activities, primarily inspections at ports-of-entry, are conducted to prevent the introduction from abroad of insect pests, nematodes, and plant diseases, to prevent movement of such plant diseases and pests between United States possessions and the mainland, and to provide certification of freedom of pests on plants and plant products to meet import requirements of countries of destination.

Selected Examples of Recent Progress:

1. Fruit insect control and eradication program:

- a. Citrus blackfly. During fiscal year 1965, the continued maintenance of a chemical buffer zone south of the border in cooperation with the Republic of Mexico effectively prevented the citrus blackfly from re-infesting United States citrus-producing areas since it was eradicated in 1956. In support of these activities, biological control is maintained by the Mexican government in areas of Mexico south of the chemical buffer zone.

Over 81,000 trees on 5,200 properties in the United States were inspected without finding a single positive specimen. In Mexico, more than 937,000 were inspected on 25,900 properties. A total of 165 infested trees were found on 23 properties in the southern extremity of the chemical buffer zone. Chemical treatments were applied promptly and no additional specimens were found. In the biological control zone, approximately 273,000 were examined and 10,816 found infested. Parasites were distributed as needed to suppress these infestations.

- b. Mexican fruit fly. During fiscal year 1965, the sterile fly technique, introduced as a control measure in 1964, was utilized in lieu of the annual spray program. Saturating

the area with sterile flies has eliminated the need for repeated pesticide applications along the California-Mexico border. It has also eliminated objections to the use of insecticides. Over 2 1/4 million flies were released during the period of May through November 1965.

Regulatory procedures were enforced to prevent spread of the fly from Texas, where it is found each year, to other citrus-producing States. During this past year, the quarantine was revised to give additional protection to citrus-producing areas of Plaquemines Parish, Louisiana, Guam, Hawaii, Puerto Rico, and the Virgin Islands (see Figure 1).

2. European chafer. A new infestation of the European chafer was located at Cleveland, Ohio, the latter part of June and apparently the beetle is continuing a westward spread. This spread to the West makes the large grain-growing Midwestern States more and more vulnerable to infestation. There has also been local spread beyond the boundaries of the areas of general infestation in New York and Pennsylvania. The new infestations in Ohio were located by use of blacklight and lure traps. Traps are a detection tool which were adapted to the European chafer program a few years ago and continue to be used as a means of increasing survey effectiveness.

A public hearing was held in December 1964 for purposes of extending the Federal regulated area to include the States of Pennsylvania and New Jersey, and to exclude West Virginia from the quarantine. On the basis of evidence presented, it was decided that the quarantine would not be extended to Pennsylvania and New Jersey since those States give promise of conducting control and regulatory programs to try to eliminate the infestations and to prevent spread of the European chafer. West Virginia was removed from the quarantine and it was officially recognized that the European chafer had been eradicated from that State.

During fiscal year 1965, 147 acres were treated in New Jersey and Pennsylvania. Immediate steps were taken to treat the find in Ohio and the new area on the periphery in Pennsylvania. From July 1 through November 27, 1965, 832 acres have been treated in Ohio and 3,072 acres in Pennsylvania.

3. Imported fire ant. In fiscal year 1965, infestations aggregating approximately 4,016,000 acres in the nine-State area were treated with mirex bait--a formulation of the toxicant mirex, soybean oil and corncob grits. In the generally infested area, two appli-

cations of 1-1/4 pounds of the bait to the acre gave better than 98 percent control. Only 1/7 of an ounce of the toxicant is required per acre. On the outlying infestations, where eradication was the objective, five pounds were applied. From July 1, 1965 through November 27, 1965 approximately 2.3 million acres were given initial treatment and 185,296 acres have received a repeat treatment (See Figure 2).

4. Grasshopper and Mormon cricket control. During fiscal year 1965, the new technique of using undiluted technical malathion resulted in a 100 percent increase in efficiency in the use of aircraft and insecticide on the grasshopper program. Instead of 1 gallon to the acre, 1/2 pint gave effective control. Hazard to man, livestock, and wildlife were practically eliminated, and it was not necessary to remove livestock from the range during treatment. Control treatments were applied to approximately 1,198,000 aggregate acres in 9 Western States where damaging populations occurred. The States and the ranchers cooperated in this program.

Surveys for the detection of incipient outbreaks of Mormon crickets were continued but no control work was required.

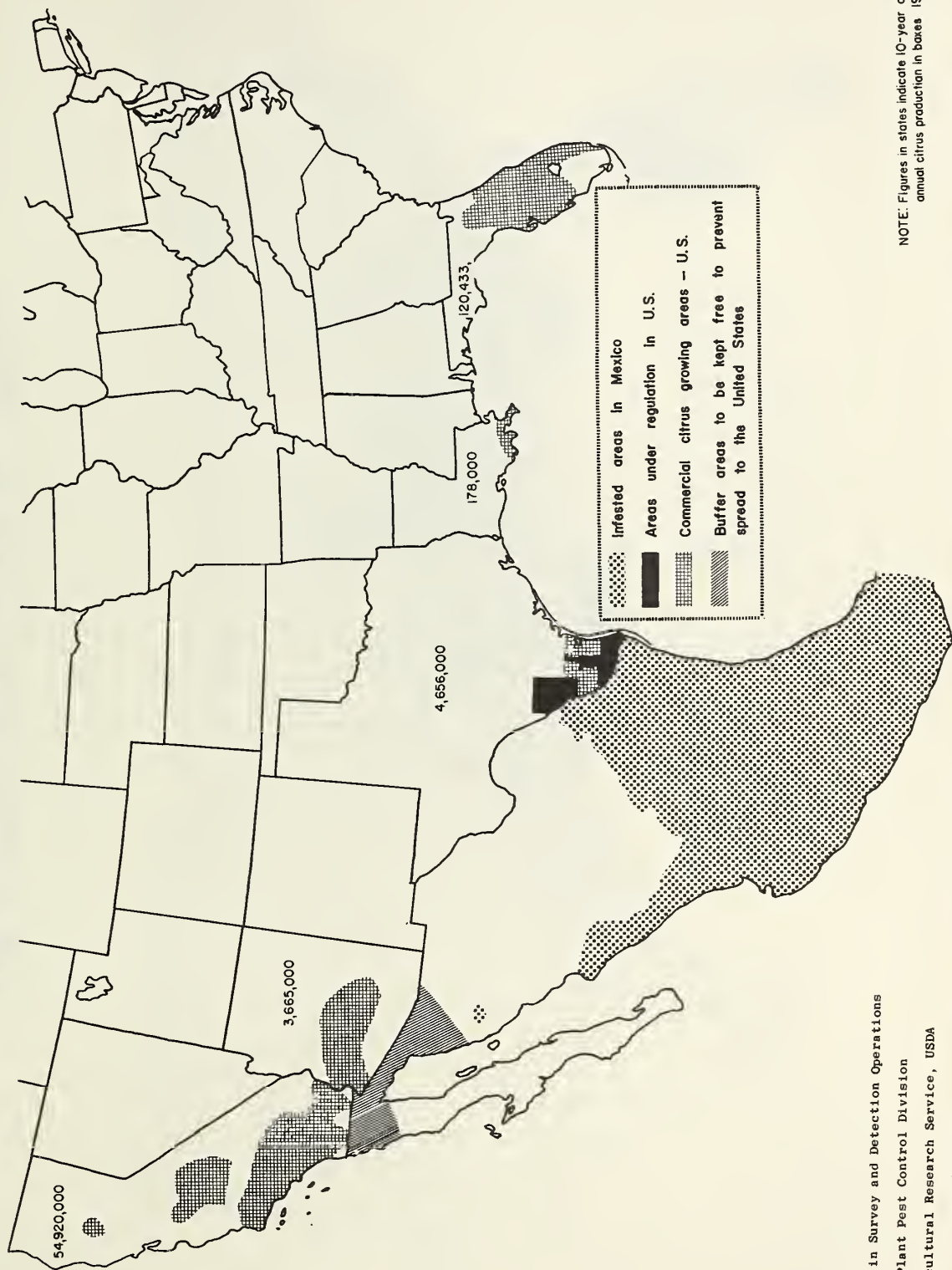
5. Gypsy moth. Gypsy moth defoliation during the summer of 1965 reached serious proportions in sections of eastern New York State involving approximately 265,000 acres of forest.

The survey program utilizing 21,524 sex attractant traps was continued throughout the areas of the country where the gypsy moth was most apt to occur.

In an effort to prevent the spread of the gypsy moth to uninfested parts of the country, 56,436 acres of outlying infestations in New Jersey, New York, and Pennsylvania were treated by air as part of the cooperative Federal-State control programs. The insecticide, Sevin, was used exclusively. Also, State and local agencies in 5 States treated approximately 175,000 acres within the generally infested areas to suppress heavy moth populations and prevent defoliation.

To supplement the chemical insecticide treatments, approximately 5 million specimens of the gypsy moth egg parasites, Ooencyrtus kuwanai, were propagated from parasitized egg masses collected in the New England area and released at sites along the periphery of the generally infested area where traps revealed infestation. Lesser numbers of a predacious beetle and a larval parasite were also collected and released. In the States of New Jersey, New York, and Pennsylvania, traps baited with gyplure, a synthetic attractant, were dropped by aircraft at 1/16 mile intervals in an

MEXICAN FRUIT FLY CONTROL

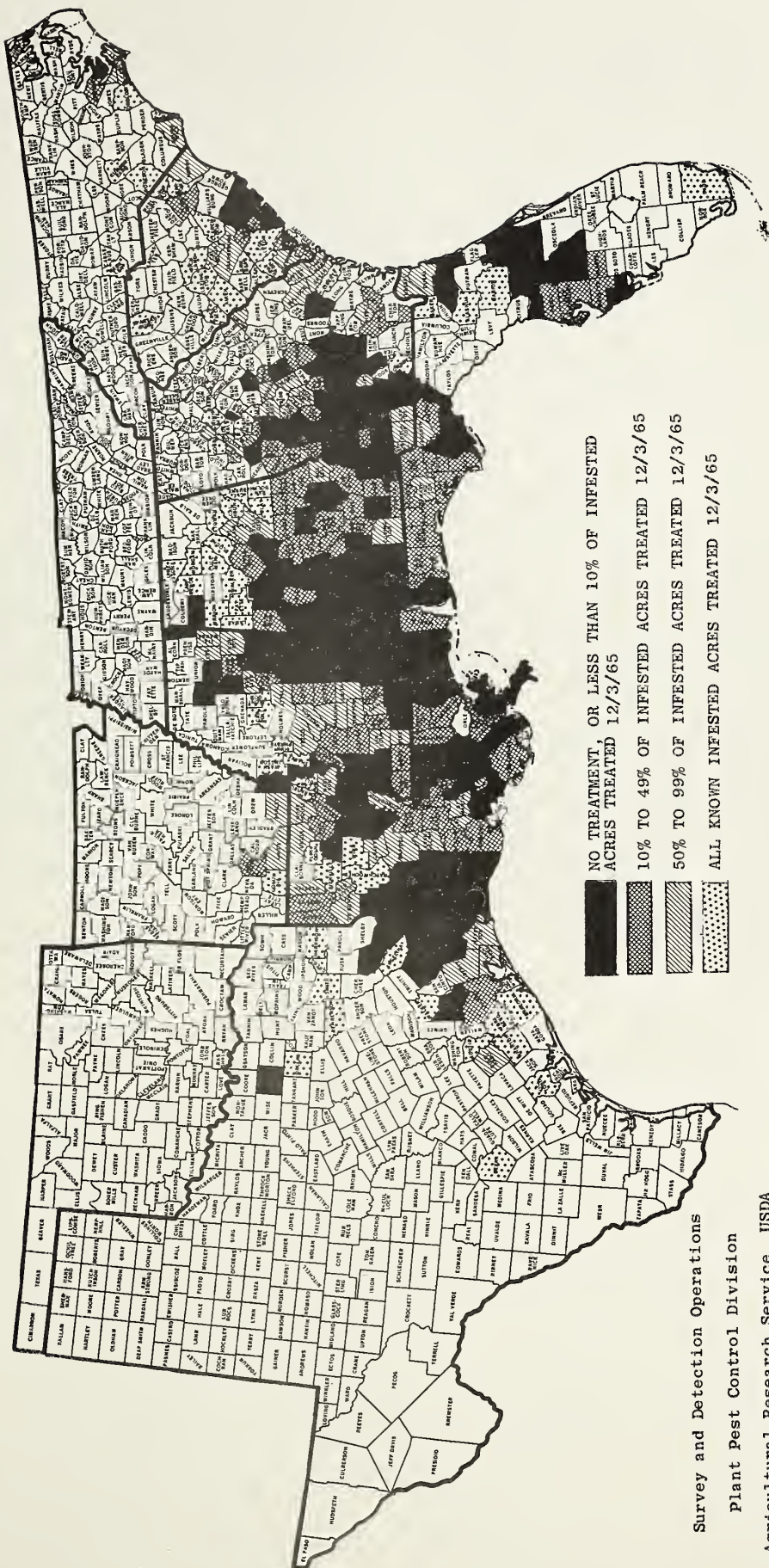


Prepared in Survey and Detection Operations
 Plant Pest Control Division
 Agricultural Research Service, USDA
 June 30, 1965

NOTE: Figures in states indicate 10-year average annual citrus production in boxes 1949-1958



IMPORTED FIRE ANT



Survey and Detection Operations
Plant Pest Control Division

Agricultural Research Service, USDA

December 3, 1965

FIGURE 2



effort to annihilate or severely depress male moth populations. In most areas, three trap drops were made at approximately two-week intervals.

6. Japanese beetle. There were approximately 60,000 Japanese beetle traps in operation in 33 States during the 1967 flight season to locate new infestations and to determine extent of spread from the generally infested area. No new long distance spread was discovered but new infestations were found on the periphery of the generally infested area in several States.

Insecticide treatments for control purposes were applied by ground and air to about 22,100 acres in Illinois, Kentucky, Michigan, Missouri, Ohio, Georgia, North Carolina, and Tennessee. Regulatory treatments were applied to approximately 16,100 acres, of which 5,400 acres were soil treated in 17 States and 10,700 were foliage treated in 5 States.

Only 2 airports, Akron-Canton and Youngstown, in Ohio were declared hazardous during 1965 flight season. This meant that any aircraft departing these airports to destinations outside regulated areas had to be treated with micronized DDT dust. The airport soil treatment program has reduced the incidence of aircraft transporting live beetles.

In a revision of Japanese beetle regulated areas, there were 57 counties in Indiana removed from regulation. This extensive change in regulations was made because there were no known infestations in the affected counties and Indiana regulatory officials agreed to enforce intrastate quarantine regulations comparable to the Federal regulations to protect noninfested counties. Other minor changes were effected in regulated areas in Georgia and South Carolina.

7. Khapra beetle. At the beginning of fiscal year 1965, the United States and Mexico were free of any known khapra beetle infestations. However, during the year, 4 infestations of the pest were found in Arizona, 4 in Mexico, and 1 in Texas. In all cases, the infested material and the premises were fumigated. Infested ships coming to American ports, particularly from Africa and Asia where khapra beetle is indigenous, pose a continuing threat of new introduction. In some instances, cargo may move from port areas before the infestation is discovered in ship's hold possibly in another port city. This requires that this cargo be traced and located and that both cargo and the carrier be fumigated.

There have been no khapra beetle infestations found in Arizona since December 15, 1964, in Mexico since February 18, 1965, in Texas since February 10, 1965. All known infestations have been fumigated (See Figure 3).

Because of the ever present threat of reintroduction, constant surveillance must be maintained to detect incipient infestations. There has been a continuing survey of the important storage facilities through the country. Inspections were made this year at over 13,000 sites in 30 States and at 2,300 sites in Mexico.

8. Pink Bollworm. The pink bollworm is now generally distributed throughout cotton-producing areas of Arizona except for Yuma and Mohave Counties. This is a condition that has developed since 1963 when practical eradication of this pest had been accomplished. The decision by the State to permit the growing of stub cotton made continuation of the eradication program in central Arizona impracticable. As a result, the Federal quarantine has been revised to remove Arizona from the eradication status and place it in a generally infested status. Through quarantine action, an attempt is being made to prevent further westward spread.

A pink bollworm was trapped in California for the first time on October 4, 1965. A total of 114 male moths had been trapped through November 9 in Riverside and Imperial Counties. In October, 12 pink bollworm moths were captured in sex-lure traps in Yuma County, Arizona, for a new county record. By November 9, 153 moths had been collected in this county.

In Louisiana and Arkansas, pink bollworm populations in fiscal year 1965 were substantially lighter than in 1964. Infestation was found in only three parishes in Louisiana and two counties in Arkansas.

The development of a sex lure trap has greatly increased the effectiveness of the pink bollworm detection survey since it is so much more effective than light traps. The limited supply of lure was used in Arizona this year.

9. Boll weevil. The work during the first year of the 3-year program on the Texas High Plains initiated in the fall of 1964 was successful in preventing further spread from east to west and affording protection to the two million bale cotton crop grown in west Texas. Treatments were applied to approximately 300,000 acres of cotton. The aggregate acreage treated was 1,136,664. The program was successful in reducing overwintering populations by more than 90 percent. This will reduce the impact of this important pest during the 1965 growing season.

KHAPRA BEETLE ERADICATION

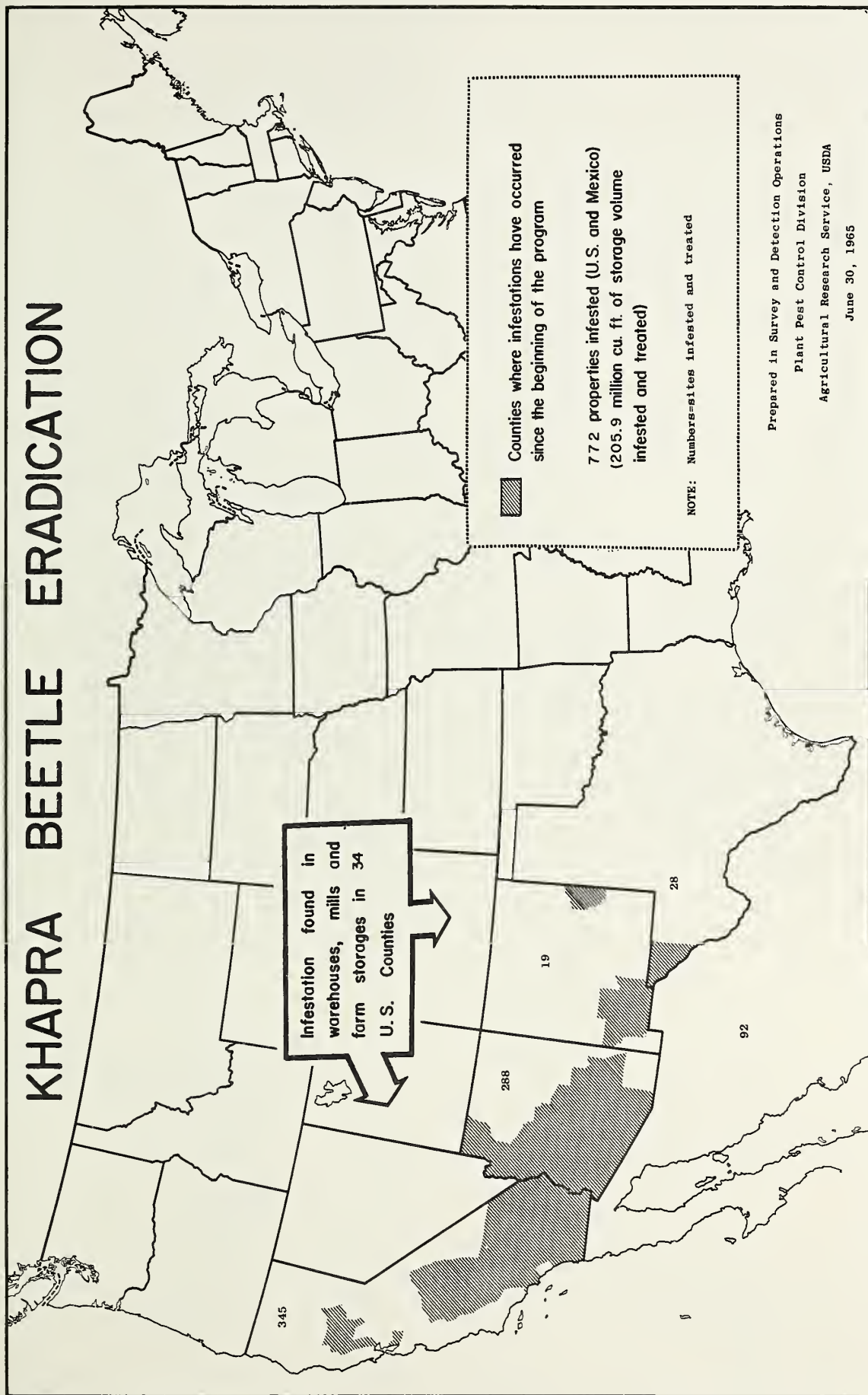


FIGURE 3

The second phase of the 3-year program on the Texas High Plains was completed on November 18, 1965. During the period September thru November 18, 1965, treatments were applied to 350,000 acres for an aggregate acreage of 1,525,000.

In addition, approximately 7,000 acres of cotton were treated in fiscal year 1965 along both sides of the Mexican-U.S. boundary between El Paso and Presidio, Texas and in the Sonora area of Mexico to establish barriers against the spread of the boll weevil from Mexico into the noninfested cotton-producing areas of the Western States. This program, which has been conducted for several years, has been successful in holding the weevil out of these highly productive cotton areas.

During the fall of 1965--14,000 acres of cotton were treated in this area for an aggregate acreage of about 125,000. This area was extended southward along the border this year to include the Presidio-Ojinaga areas.

Low volume malathion treatments were used for all boll weevil control. The use of this new technique developed through methods improvement work resulted in more than a 90 percent reduction in insecticide application costs and substituted an insecticide of very low toxicity for the highly toxic chemicals normally used in the control of this insect.

10. Sweetpotato weevil. Following the January 1962 freeze, which reduced the weevil population to the lowest level in history, an all-out control effort was made to knock out the remaining population. Although successful to a degree, it brought only temporary relief. The freeze did not kill the roots of host plants; thus, they soon recovered to provide food for the surviving weevils; however, populations were low during the 1965 fiscal year. More than 13,177 acres were treated by farmers using 2% dieldrin dust for field applications in the six infested States. Under State and Federal supervision approximately 1,344,100 bushels of sweetpotatoes were treated with DDT in storage. During the 1965 fiscal year, there were 500 properties reported infested; compared to 594 in the previous year.
11. White-fringed beetle. During fiscal year 1965, infestations of white-fringed beetle were found on an additional 321,500 acres. Counties reported infested for the first time included 9 in Alabama, 2 in Georgia, 1 in Louisiana, 3 in Mississippi, 3 in North Carolina, 1 in South Carolina, and 6 in Tennessee. The restriction on the use of chlorinated hydrocarbon insecticides was responsible for much of this spread.

Eradication treatments were applied on 16,187 acres of nursery and other sites so that commodities could be certified as "beetle-free" and eligible for shipment interstate. Populations were suppressed with foliage treatment on 11,330 acres around regulated establishments during the adult season. Farmers treated 33,132 acres to protect crops from damage.

12. Burrowing nematode. The barrier program, initiated in fiscal year 1962, was continued in fiscal year 1965. This involves the establishment of chemical barriers around all infestations to contain the disease and thus prevent spread to uninfested groves. Owners are permitted to harvest citrus fruit from affected groves until the crop is no longer profitable. The program has the support of the industry. A total of 213 linear miles of chemical barrier has been established by the State of Florida and maintained to prevent spread of the burrowing nematode to healthy groves. Individual trees and entire groves that became unproductive were cleared and the land treated with a nematocide. During the year 509 acres were treated in 122 citrus plantings as a part of the overall effort to eradicate this pest. New infestations were found this year in 142 citrus groves, in the environs of six commercial nurseries, and in five ornamental nurseries (See Figure 4).

Since the recent discovery of the burrowing nematode in one of the major citrus nurseries in Florida funds were released from the contingency fund to inspect all citrus nurseries in Florida as soon as possible. Approximately 1,000 nurseries comprising 5,500 acres of nursery stock are involved.

13. Golden nematode. Systematic surveys for the golden nematode on Long Island, New York, and periodic surveys in other potato-producing States show that the pest is still confined in two counties on Long Island. New infestations detected annually on Long Island have leveled off to approximately 200 acres. This acreage is treated as soon as soil conditions permit. During fiscal year 1965, eradication treatments were applied to 15 properties totaling 499 acres. Since the beginning of the eradication program, approximately 3,600 acres have been treated and released for agricultural production. All known infested potato fields have been treated. There remains infested 1,300 acres, consisting largely of vegetable cropland, cultivated sod, and pastures, to be treated.

BURROWING NEMATODE

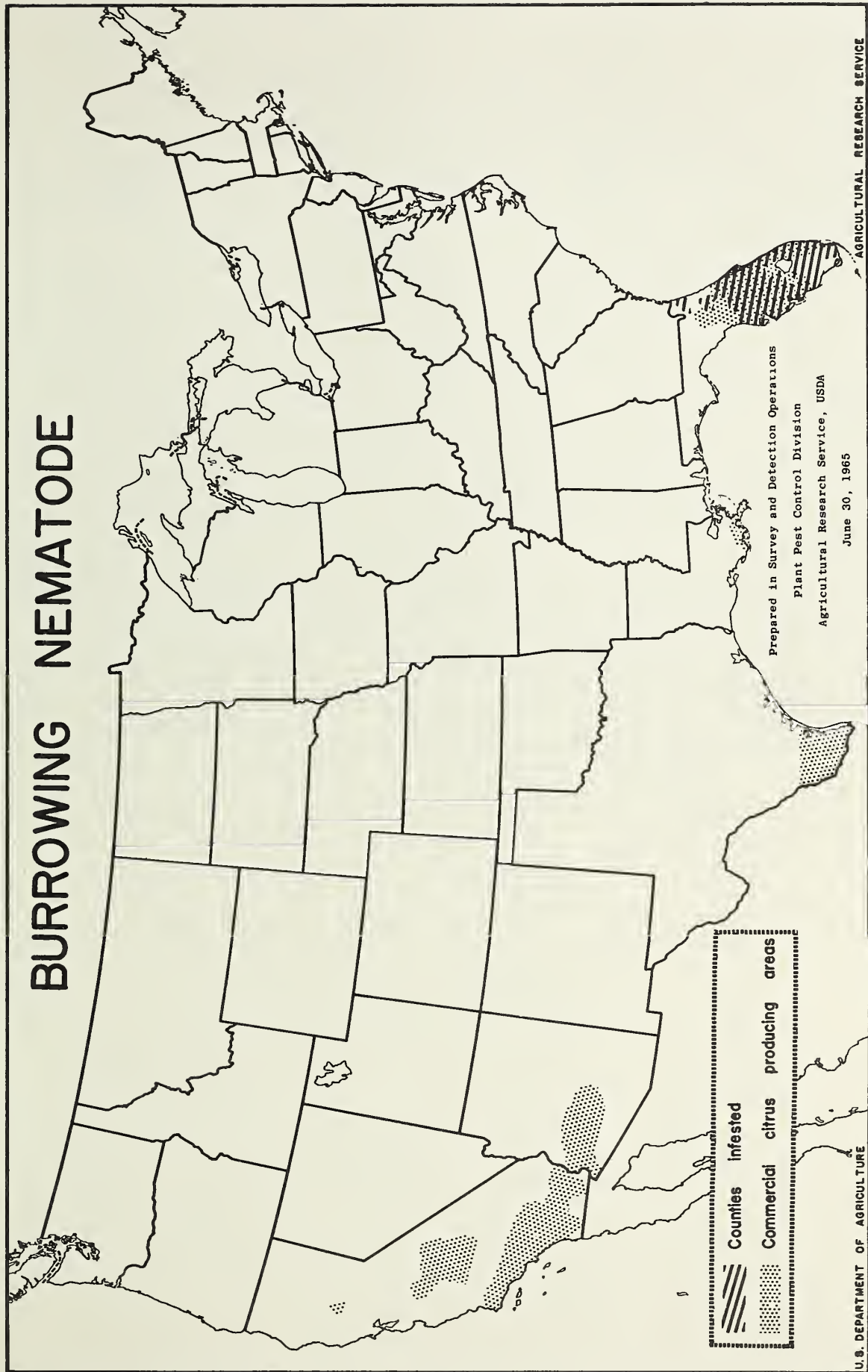


FIGURE 4

14. Soybean cyst nematode. During fiscal year 1965, soil sampling surveys have revealed infestation on 192,000 acres in the affected States. Most of the damage occurred in Arkansas, Missouri, North Carolina, and Tennessee. Based on field observations, it is estimated that the nematode occurs on an aggregate of more than 400,000 acres. About 36,000 acres of new infestation were found this year.

One of the most promising advances in the control of this pest is the development of a commercially acceptable, resistant variety of soybeans. On July 1, 1965, the Department and cooperative State experiment stations announced the release of the first yellow-seeded soybean variety that is resistant to the nematode. The new variety named Pickett has generally the same characteristics as the commercially desirable Lee variety and is adapted for use in several States where the nematode occurs. Seed of the Pickett variety is being increased and commercial supplies of seed should be available in 1967 for distributing to farmers in nematode infested areas to which it is adapted.

15. Barberry eradication. Progress continued on the cooperative program to remove susceptible barberry plants from the 19 Northern States. There are about 37,000 square miles remaining in the eradication area which will need one or more inspections to assure eradication of the rust-susceptible species of barberry. The most active programs are in Illinois, Iowa, Kansas, Michigan, Missouri, Ohio, Pennsylvania, Virginia, and Washington. During fiscal year 1965, 3,551,045 rust-susceptible barberry bushes were destroyed on 2,449 properties in 17 States.

Enforcement of Federal Quarantine No. 38 is an essential part of the long range program to eliminate rust spreading species of barberry. This requires annual inspection of nurseries and dealer establishments to make sure that rust-susceptible barberries are not sold within or shipped into the eradication States. During the year, 778 nurseries and dealer establishments were inspected and qualified for certificates which permit the growing and sale of nonsusceptible barberry stock.

16. Phony peach and peach mosaic. The cooperative phony peach and peach mosaic programs have reduced the incidence of the diseases to the point which permits profitable commercial peach production in areas where the diseases are present. The low level of phony peach infection in hosts in the last several years continues at about the same rate of incidence. During the year, 5,650,577 peach trees were inspected with only 0.12% or 6,882 trees found infected. In 1964, the infection rate was 0.2%.

Peach mosaic activities involved the inspection of 4,579,686 trees and only 411 on 183 properties were found infected. In California where 17 counties were surveyed, two counties were infected.

17. Witchweed. Eradication activities conducted during fiscal year 1965 continued to confine witchweed to a relatively small contiguous area in North Carolina and South Carolina. One new county in South Carolina was found infested in August 1965 which is the first additional county found in the two States since 1963 crop year. As of June 30, 1965, 231,725 acres in 24 North Carolina counties and 48,347 acres in 10 South Carolina counties were known to be infested. Between July 1, 1965, and November 27, 1965; 17,118 acres have been found infested in the two States. Herbicide treatments were applied to 447,997 aggregate acres this year (See Figure 5).

The cooperative control program has practically eliminated crop damage in the infested area. In areas where treatments have been applied two or more years, the occurrence of witchweed has been greatly reduced. During the 1964 crop season, no witchweed was found on more than 1,500 previously infested farms in the two States. This program has also been successful in preventing witchweed spread to the principal corn, sorghum, and sugarcane producing areas of the United States.

Methods improvement work continues to find more effective witchweed control in cotton and soybean areas.

18. Cereal leaf beetle. During fiscal year 1965, surveys revealed the first infestation in Illinois, extensive but light infestations in Ohio, and several newly infested counties in both Indiana and Michigan. As of June 30, 1965, the pest is known to occur in 132 counties in four States--42 in Michigan, 49 in Ohio, 38 in Indiana, and 3 in Illinois. The following map illustrates the infested area as of August 1, 1965 (See Figure 6).

To relieve population pressures, control treatments were applied in counties where heavy infestations occur. An aggregate of 416,292 acres were treated with the insecticides malathion and Sevin. The entire infestation in Illinois was treated; consequently, no quarantine was imposed in that State. With the discovery of the beetle in several new counties in Indiana, Michigan, and Ohio, the regulated area in those States has been considerably increased.

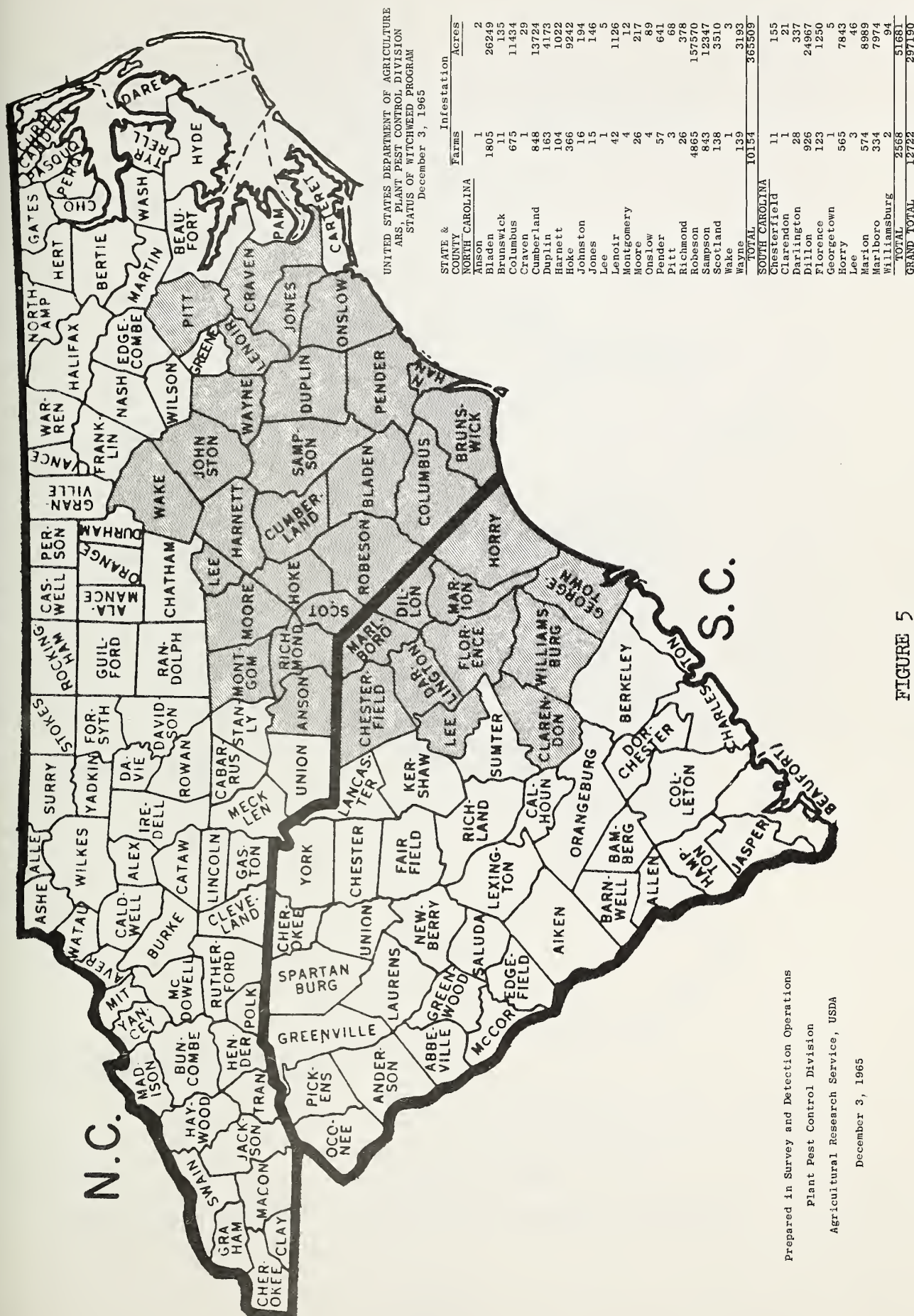


FIGURE 5

Prepared in Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service, USDA
December 3, 1965

CEREAL LEAF BEETLE

Oulema melanopa (L.)



Infested before June 30, 1965

Named counties infested July 1 through
November 19, 1965

CEIR 15(48): 11-26-65

Eradicative treatment applied in Illinois

FIGURE 6

Methods improvement activities concerned with investigations of hibernation studies in hay have shown that the beetle will not survive in dry hay after January 15 nor in straw and marsh hay after February 28; therefore, treatment and certification of these commodities is no longer required after those dates. Quarantines were revised accordingly to allow for this change in certification period which will greatly facilitate interstate shipments.

19. Pesticides monitoring. Agricultural pesticide monitoring activities initiated in the Mississippi Delta States in fiscal year 1964, were continued and expanded in fiscal year 1965. Three additional study areas were established. These are located at Yuma, Arizona; Grand Forks, North Dakota; and Mobile Alabama. Sampling of soil, sediment, water, crops, fish, wildlife, and other environmental media was intensified at these stations as well as in the study areas at Stuttgart, Arkansas, Greenville, Mississippi, and Utica, Mississippi. Special studies on the fate of pesticides in soils were started at 14 other locations throughout the country.

At the close of the year, chemical analyses have been run on 3,700 samples at the Gulfport, Mississippi, laboratory, and a preliminary report on residues in soils, water, and sediment was in preparation. The efficiency of the analytical laboratory was increased through the addition of technical personnel, modern equipment, and better facilities.

Results of the first year's work indicate that pesticide residues have not built up to significant levels in soil, sediment, and water in the areas. Field observations on nontarget animal and plant life have not yet revealed any significant deleterious effects from pesticide use on these values.

Programs to monitor the effects of pesticides used on cooperative large-scale Federal-State control operations on the environment were continued where warranted. Over 5,000 samples were collected for study. Nontarget insects, soil, water, and sediment exposed to the treatment were analyzed for pesticide residues. A substantial part of the monitoring activity is provided through cooperative participation of State and Federal agencies interested in pesticide use problems. Monitoring reports were distributed during the year on the following control programs: Gypsy moth program in New Jersey and Pennsylvania; boll weevil in High Plains, Texas, area; and grasshopper in western Nebraska. Reports on the effects of the Japanese beetle and cereal leaf beetle programs in Michigan are being processed.

20. Insect detection and survey operations. Only one new economically important insect, the Formosan subterranean termite, was reported during fiscal year 1965. There were 69 reports of insects new to certain counties, and 3 records of insects new to the United States. The Formosan termite was found at Houston, Texas, the cereal leaf beetle in Illinois, and the face fly in Utah, Idaho and Washington. Mediterranean fruit fly traps were operated in Florida to detect any new infiltration of that pest. None were trapped.

In late April 1965, the Caribbean fruit fly, Anastrepha suspensa was taken in traps near the Miama International Airport in Florida and, shortly thereafter, reached very high populations by late June or early July, a condition never before observed in Florida. This is the first known occurrence of the fly in Florida since 1959. It has not been found to attack citrus in this country.

Precautionary measures were taken by State and Federal authorities to ascertain the insect's distribution pattern. Tests were made with new survey procedures, and insecticides as a defensive measure in order to be prepared to act rapidly should the species become an economic pest. As of June 30, 1965 populations had leveled off. The Cooperative Economic Insect Report, a nationwide compilation of insect conditions, continues in demand and now reaches approximately 4,100 individuals each week.

21. Contingency fund. Table 1 shows releases from the contingency fund from fiscal year 1962 through fiscal year 1966 (December 31, 1965).

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE

Releases from the Contingency Fund for Control of Emergency Outbreaks of Insects
and Plant Diseases, Fiscal Year 1962 through 1966 (December 31, 1965)

	(in thousands)					1966 to 12/31/65
	1962	1963	1964	1965		
Contingency Fund:						
Annual appropriation acts	\$1,500.0	\$1,500.0	\$1,500.0	\$1,500.0	\$1,500.0	\$1,500.0
Releases for Control of Emergency Outbreaks of Insects:						
Citrus blackfly	150.0	60.0				
Sweetpotato weevil	a/ 200.0	40.0				
Japanese beetle	100.0	110.0	130.0			
Mediterranean fruit fly	a/ 105.0	200.0	150.0			
Hoja blanca			25.0			
Pink bollworm	400.0	400.0	200.0	200.0		
Cereal leaf beetle		250.0	400.0	500.0		
Southern green stinkbug			30.0	20.0		
Oriental fruit fly				50.0		
Khapra beetle		125.0		75.0		
Boll weevil			200.0	250.0		250.0
Burrowing nematode						225.0
Caribbean fruit fly (<u>Anastrepha suspensa</u>)						50.0
Grasshopper						60.0
European chafer						65.0
Total releases	955.0	1,185.0	1,135.0	1,095.0		650.0
Balance in Contingency Fund	545.0	315.0	365.0	405.0		850.0

a/ \$30,300 from release for sweetpotato weevil redirected to the Mediterranean fruit fly eradication program.

TABLE 1

Plant Quarantine

1. Inspection workload increases. During fiscal year 1965, a record total of 186 million travelers entered the United States, 8 million more than 1964. Significant increases occurred in plant quarantine workload elements as follows:

Carriers Inspected:

The total number of carriers inspected at land, sea and air ports of entry increased 8% over fiscal year 1964. Planes inspected increased to 179,018 or 11.7% over 1964. Vehicles inspected at the Mexican Border increased by 7.5% to 29,857,226; railway cars inspected increased by 8.6% to 75,790. Among carriers, only the number of ship inspections declined, from 64,129 to 61,313 or -4.4%. However, ships inspected in fiscal year 1965 exceeded that of any year prior to 1964. A prolonged maritime strike on the Atlantic and Gulf Coasts is believed to have been the principal cause for the drop in 1965.

Volume of Cargo Inspections:

The number of entries of agricultural materials under permit rose by 4%, from 81,734 to 85,110. Of even greater significance, however, was a 17.9% increase in man-hours required for inspection of miscellaneous cargo items and a 13% increase in the number of packages treated or cleaned. Air cargo requiring plant quarantine inspection totaled 979,909 pieces, or 4.6% more than during 1964.

2. Interceptions of prohibited plant materials and plant pests. The number of interceptions of prohibited plant materials and plant pests rose from 436,668 for Fiscal Year 1964 to 478,769 for 1965, a gain of 9.6%. The following table reflects the number of interceptions of some of the more important plant pests and indicates the continued effectiveness of the pest interception effort.

MAJOR PEST INTERCEPTIONS

Pest	F.Y. 1965	Number of Interceptions
		Average per year 1962-1964
Fruit flies:		
Mediterranean	196	202
Mexican	223	252
Oriental	84	39
Olive	36	69
European cherry	104	75
Khapra beetle	462	281
Citrus canker	245	251
Golden nematode	101	55
Sweet orange scab	299	248
Japanese citrus scale	617	413
Black spot of citrus	571	470

3. Special inspection problems with contaminated ships and cargoes. Inspection of miscellaneous, non-agricultural cargoes continues to present problems. This type of inspection is difficult and time-consuming because of the absence of a host-pest relationship. The khapra beetle is largely responsible for inspection and treatment problems. Many man hours are devoted to the inspection of ships' holds for the early detection of khapra beetle. Failure to find the pest at first port of arrival often results in costly follow-up action to track down and inspect or treat cargo delivered from holds later found to be infested. The number of interceptions of khapra beetle and of ship fumigations resulting from its presence is illustrated in the following table:

KHAPRA BEETLE
COMPARATIVE SIX YEAR SUMMARY OF
INTERCEPTIONS AND FUMIGATIONS

<u>Fiscal Year</u>	<u>Interceptions</u>	<u>Ship Fumigations</u>
1960	131	17
1961	202	37
1962	249	38
1963	225	34
1964	368	63
1965	462	105

4. Pre-departure inspection outside continental United States. The pre-departure inspection of aircraft and of the baggage of air travelers continues to expand in Hawaii, Puerto Rico, Nassau and Bermuda. The number of aircraft given pre-departure clearance for flight to the mainland increased from 24,312 in 1964 to 28,384 in 1965, a gain of 16.7%. At the same time, the number of passengers and pieces of baggage involved increased by 17% and 14% respectively.
5. Public Information Program for Travelers Continues. A program to inform travelers of agricultural quarantine laws, initiated several years ago, was continued and expanded during 1965.

Cooperation with carriers.

The American flag airlines met with the Department in July 1965, and a committee consisting of industry and government representatives was formed to expedite plans to provide notice of agricultural quarantines to airline travelers. Methods proposed include use of a standardized notice of quarantine restrictions in all airline materials given to travelers; training materials for airline personnel so that they can better advise travelers about agricultural quarantine restrictions; use of movies and exhibits in airports and use of movies aboard airplanes; and expansion of efforts to obtain cooperation of travel agents to inform travelers at the time airline tickets are purchased.

Some airlines are now including agricultural quarantine notices in publications and time tables, and using training materials to acquaint airline personnel with quarantine restrictions. Following the meeting one company is now including in all ticket folders for travel to and from the Islands a specialized flyer prepared on agricultural quarantines applying to Hawaii. Other companies have asked for agricultural quarantine flyers now available.

A similar meeting was held with representatives of the American flag steamship lines in December 1965 to explore additional ways of providing agricultural quarantine information to travelers utilizing this means of transportation.

Mexican border

A new flyer concerning quarantine restrictions applying to travel to Mexico is being distributed by hotels, motels, insurance offices, and travel agents. Also, three major gasoline companies are supplying this flyer in trip kits prepared for persons traveling to Mexico. A similar quarantine notice is being printed by Sanborne's Travel Agency and supplied to persons requesting information on travel to Mexico.

Other Informational Activities:

During the year, flyers on agricultural quarantine restrictions were provided to 1720 travel agents in the United States for their use when booking foreign travel.

The Department, in cooperation with other border clearance agencies and the U. S. Travel Service, prepared a 10-minute motion picture showing entry procedures. This movie includes notice of agricultural quarantines. Plans are being made to translate the narration into eight foreign languages and to show the movie in U. S. Travel Service offices throughout the world.

Publications issued overseas to persons applying for visas for travel to the United States, and to persons in the United States obtaining passports for travel abroad were continued and a notice of agricultural quarantine restrictions printed in all U. S. passports. A publication showing photos available was sent to 1500 U. S. newspapers during 1965. More than 100 newspaper and magazine articles have resulted. One-minute television spot announcements were continued and three new announcements were sent to 200 television stations reaching an estimated 75 million viewers. Two longer television programs on agricultural quarantines were prepared for use by farm program directors. One was filmed and distributed to 200 stations; the second placed on video tape and supplied to stations requesting farm material.

Efforts to inform military travelers of agricultural quarantines were greatly expanded by placing a 17-minute film, "Don't Bring Your Enemy Home", in 200 Air Force libraries in the United States and overseas. These prints are in addition to copies used by Plant Quarantine Division personnel to brief mass military movements, cargo handlers, and other cooperating military personnel.

6. Plant quarantine workload is reflected in the following table comparing the past two fiscal years and estimates for the current fiscal year:

Workload Data, Fiscal Years 1964 through 1966

	F.Y. 1964 (Actual)	F.Y. 1965 (Actual)	F.Y. 1966 (Estimated)
<u>Inspections:</u>			
Airplanes, approximately 38% carrying unauthorized plant material in 1965	160,306	179,018	190,000
Vessels inspected, approximately 43% carrying unauthorized material in 1965	64,129	61,313	63,000
Cargo importations of plant material under permit	81,734	85,110	90,000
Mail inspection, packages	44,441,637	47,739,540	50,000,000
Air cargo inspection, packages	936,757	979,909	1,000,000
Miscellaneous cargo inspections... (automobiles, machinery, etc., for contamination by plant pests), man-hours	67,800	79,929	90,000
Packages cleaned or treated	4,528,288	5,120,906	6,000,000
Containers of products inspected for export from the United States	57,056,517	35,141,814	60,000,000
Export certificates issued	48,724	44,462	50,000
Vehicles from Mexico	27,764,088	29,857,226	31,000,000
Baggage with surface-borne passengers from Mexico	12,049,426	14,033,997	16,000,000
Baggage, airborne, pieces of (all ports)	16,109,314	18,711,970	20,000,000
Baggage with ships' passengers, number of pieces (all ports) ...	3,973,063	3,855,905	4,000,000

ANIMAL DISEASE AND PEST CONTROL

Current Activities: Nationwide animal disease control and eradication programs to protect the livestock industry are conducted in cooperation with State and local agencies. Laws and regulations are administered to prevent the spread of diseases through interstate shipments of livestock and poultry and to insure humane treatment of transported livestock. Miscellaneous disease conditions are diagnosed, as required.

Inspection and quarantine activities are conducted to prevent the introduction into this country of communicable animal diseases of foreign origin. Determinations are made regarding the freedom from disease of animals, poultry, animal products and related materials presented for importation from foreign countries. Livestock for export inspected, health certificates issued, and facilities examined to assure provisions for humane and safe transportation. Under the Virus-Serum-Toxin Act, activities are conducted to prevent the production and interstate distribution of worthless, contaminated, dangerous and harmful veterinary biologics.

Selected Examples of Recent Progress:

Animal Disease Prevention, Control and Eradication

1. Tuberculosis eradication:

a. Incidence of disease reduced. The percentage of reactors to the tuberculin test for F.Y. 1965 was 0.08% as compared with 0.10% for F.Y. 1964. This is the lowest percentage for any year in the history of the program. This results from greater emphasis on field epidemiological studies and the special handling of problem herds where the disease persists. These scientific procedures have also reduced the number of tests formerly conducted on a "down-the-road" basis. In fiscal year 1965, a total of 7,139,667 animals were tested compared to 8,252,855 in 1964.

b. Increased attention directed toward herds with persistent infection. One of the most important eradication tools available is the slaughter of all animals in heavily infected herds and herds with prolonged infection. These herds, if not eliminated, ultimately cost more in indemnity and repeated tests than the initial cost of elimination. Further, they act as a potential source of infection for other herds. Increased emphasis on radical eradication procedures in known infected herds resulted in the elimination of 22 infected herds in F.Y. 1965 as compared with 8 for F.Y. 1964. This was the first full year under new regulations which permit elimination of all exposed cattle in the herd with the payment of Federal and State indemnities.

c. Table 2 shows cooperative activities for fiscal year 1965.

2. Brucellosis eradication:

a. Modified certified areas. North Dakota achieved State-wide Modified Certified Brucellosis Area status. At the close of fiscal year 1965, 39 States, Puerto Rico and the Virgin Islands have now achieved this status of having less than five percent of their herds and less than one percent of their cattle affected with brucellosis. A total of 84 counties became modified certified for a total of 2,734, representing 87 percent of the counties in the nation. By September 30, 1965, an additional 20 counties became modified certified (See Figure 7).

b. Three more States became Certified brucellosis-free. Connecticut, Wisconsin and Vermont achieved Certified Brucellosis-Free status during fiscal year 1965, making a total of 7 States and the Virgin Islands certified-free. A total of 172 counties were declared brucellosis-free for a total of 470 counties in 27 States which are now certified brucellosis-free. These areas contain approximately 300,000 herds and over 8,000,000 cattle.

c. The following table shows a comparison of area certification during fiscal year 1964 and 1965:

	Fiscal Year	
	1964	1965
<u>Modified Certified Areas:</u>		
Counties:		
Certified during year	77	84
Total certified at end of year	2650	2734
States (including Puerto Rico & Virgin Islands)		
Certified during year	4	1
Total certified at end of year	38	39
<u>Certified Brucellosis-Free Areas:</u>		
Counties:		
Certified during year	106	172
Total certified at end of year	298	470
<u>States:</u>		
Certified during year	3	3
Certified at end of year	4 & V.I.	7 & V.I.

d. Market cattle testing. Eradication of brucellosis is being hastened through the use of market cattle testing, whereby foci of the disease are located by tracing animals found infected during the marketing process to the herd from which they originate. By this means, the disease is usually found much earlier than with the older procedure of testing all herds in an area over a long period of time.

Market cattle testing has been in use for six years, growing from less than 150,000 cattle in 1960 to 3-3/4 million in 1965. It accounts for the reduction in the total animals tested since it is unnecessary to test herds shown by this surveillance procedure not to be infected. It also accounts for the slight increase in the percentage of animals reacting to the blood test since eradication work is being intensified in those herds found to be infected by market cattle testing.

Several years will be required until the program reaches a level of approximately 8 million cattle which is considered to be adequate surveillance of herds. Figure 8 indicates market cattle testing activities.

e. Swine Brucellosis. Establishment of Validated Brucellosis-Free herds is the primary effort of the swine brucellosis eradication program. There was an increase of 310 validated herds during the year for a total of 1920. Utah and Vermont eradicated brucellosis from their swine population. California, Hawaii and Georgia have counties which are free of swine brucellosis. During the year there was an increase of 44 Validated Brucellosis-Free counties making a total of 87.

f. Federal-Cooperator financing. A distribution by State or Federal and Cooperators funds in fiscal year 1965 and other data relating to the program are shown in tables 3 to 5.

3. Scabies eradication:

a. On farm inspections materially increased. During fiscal year 1965, inspections of sheep in farm flocks were 21,081,000 animals, an increase as compared with 1964 when 15,529,000 were inspected. The increased farm-flock inspections disclosed a total of 168 infected flocks as compared to 126 in 1964. The major part of the increased number of infected flocks was in Iowa where intensified inspections located 119 outbreaks as compared to 38 the previous year. Increased inspection disclosed 35 outbreaks of scabies in flocks in areas previously classed as scabies-free in the States of California, Texas, Kansas, Nebraska, Wyoming, Minnesota, Illinois, Ohio, Virginia, Maryland, New Jersey, Pennsylvania, and New York. Locating and eliminating these foci of infection contributes greatly toward the goal of complete eradication by preventing further spread.

b. Greater emphasis in problem areas: In order to step up work in areas which were delaying the eradication effort, two inspections of all sheep were made in the States of Nebraska, Indiana and Iowa. These inspections represented the first concentrated attack on the disease in Iowa (See Figure 9).

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL HEALTH DIVISION

SUMMARY OF BOVINE TUBERCULOSIS ERADICATION IN COOPERATION WITH THE VARIOUS STATES
FISCAL YEAR 1965

STATES	Tuberculin Tests					
	Herds Tested	Cattle Tested	Infected Premises	Percent Infected	Reactors Found	Percent Reactors
Alabama	332	19,914	4	1.2	12	0.06
Alaska	67	1,837	0	0.0	0	0.00
Arizona	791	31,772	11	1.4	53	0.17
Arkansas	755	20,812	2	0.3	3	0.01
California	8,421	428,673	126	1.5	350	0.08
Colorado	1,003	28,337	26	2.6	216	0.76
Connecticut	3,993	104,026	22	0.6	100	0.10
Delaware	1,137	26,132	3	0.3	5	0.02
Florida	2,836	205,201	29	1.0	74	0.04
Georgia	1,934	78,501	4	0.2	7	0.01
Hawaii	295	17,448	16	5.4	54	0.31
Idaho	1,073	22,311	5	0.5	9	0.04
Illinois	11,328	212,113	96	0.8	212	0.10
Indiana	20,551	288,331	119	0.6	248	0.09
Iowa	10,528	217,374	216	2.1	418	0.19
Kansas	6,686	163,792	34	0.5	55	0.03
Kentucky	3,170	58,056	20	0.6	32	0.06
Louisiana	1,663	96,180	16	1.0	40	0.04
Maine	1,903	44,151	1	0.1	6	0.01
Maryland	7,714	243,545	60	0.8	86	0.04
Massachusetts	5,308	127,170	16	0.3	19	0.01
Michigan	20,167	252,970	156	0.8	387	0.15
Minnesota	24,949	415,529	19	0.1	22	0.01
Mississippi	2,385	73,504	1	0.1	1	0.01
Missouri	12,869	273,447	29	0.2	50	0.02
Montana	655	11,789	3	0.5	5	0.04
Nebraska	4,754	85,660	20	0.4	31	0.04
Nevada	111	2,970	0	0.0	0	0.00
New Hampshire	3,335	66,383	1	0.1	1	0.01
New Jersey	3,018	70,333	35	1.2	106	0.15
New Mexico	390	13,394	3	0.8	3	0.02
New York	18,374	409,035	143	0.8	341	0.08
North Carolina	5,949	180,501	39	0.7	80	0.04
North Dakota	3,861	58,815	22	0.6	67	0.11
Ohio	19,410	248,431	99	0.5	162	0.07
Oklahoma	3,256	98,685	5	0.2	6	0.01
Oregon	4,761	72,650	32	0.7	62	0.09
Pennsylvania	32,063	742,378	219	0.7	613	0.08
Rhode Island	1,031	16,164	21	2.0	26	0.16
South Carolina	1,472	57,605	1	0.1	1	0.01
South Dakota	2,200	41,617	12	0.5	23	0.06
Tennessee	1,369	51,379	34	2.5	150	0.29
Texas	10,210	255,286	38	0.4	490	0.19
Utah	434	14,685	24	5.5	47	0.32
Vermont	3,917	126,975	18	0.5	32	0.03
Virginia	5,890	227,730	16	0.3	40	0.02
Washington	1,386	28,817	7	0.5	25	0.09
West Virginia	1,268	42,564	0	0.0	0	0.00
Wisconsin	25,128	697,256	77	0.3	263	0.04
Wyoming	557	11,463	3	0.5	6	0.05
Puerto Rico	1,773	55,813	39	2.2	569	1.02
Virgin Islands	5	163	0	0.0	0	0.00
TOTAL	308,435	7,139,667	1,942	0.6	5,608	0.08

TABLE 2

BRUCELLOSIS ERADICATION PROGRAM

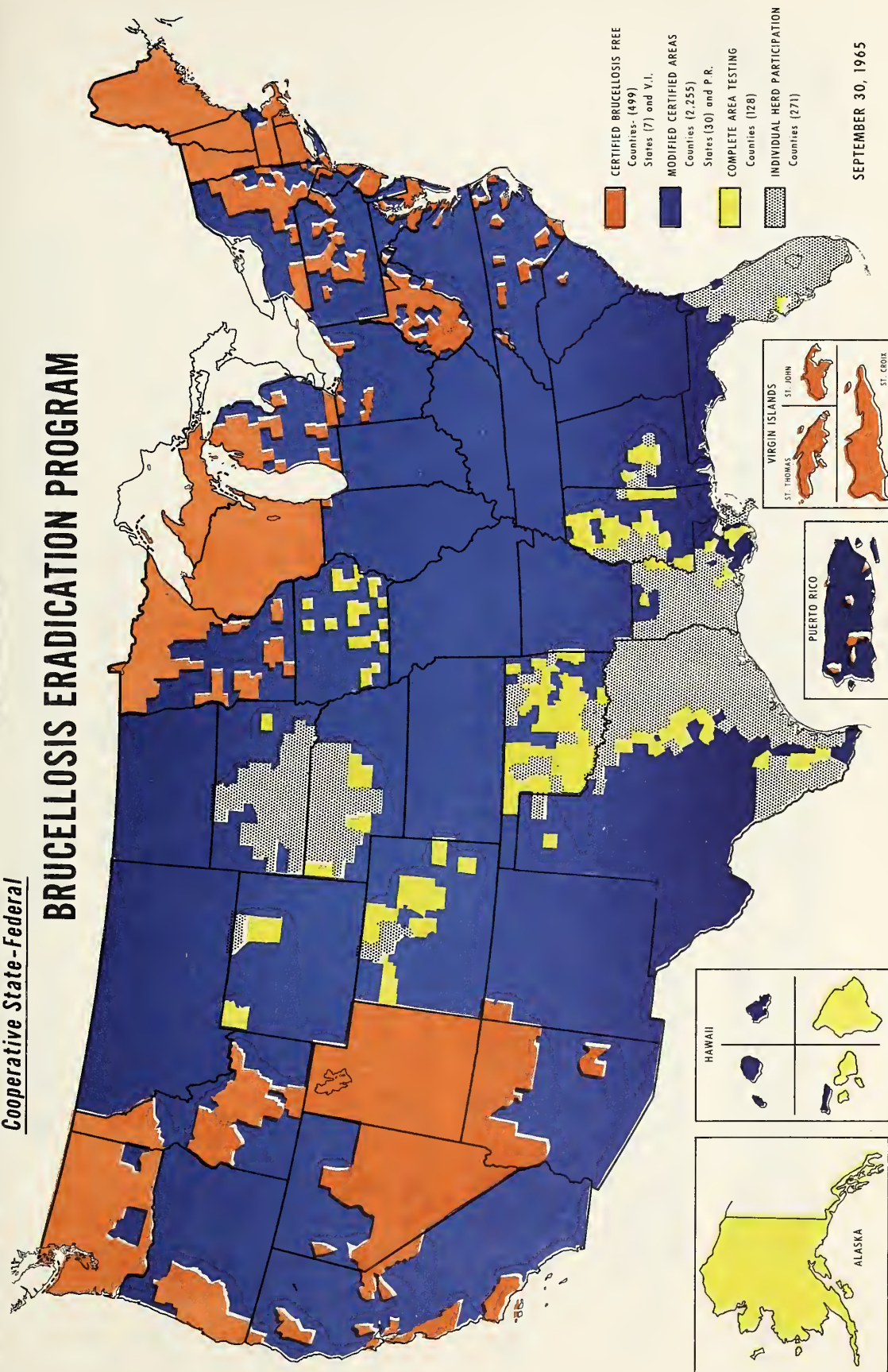
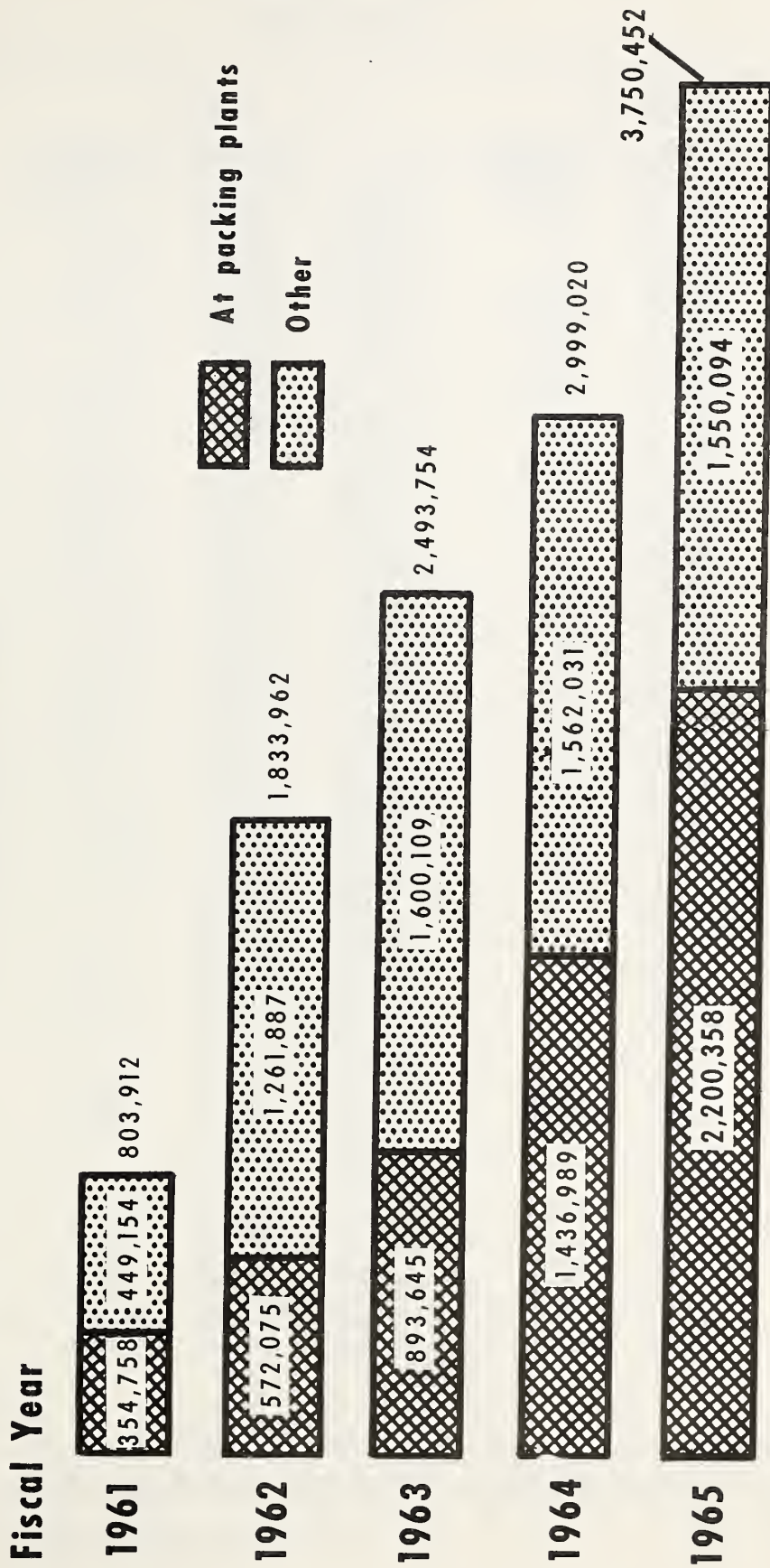
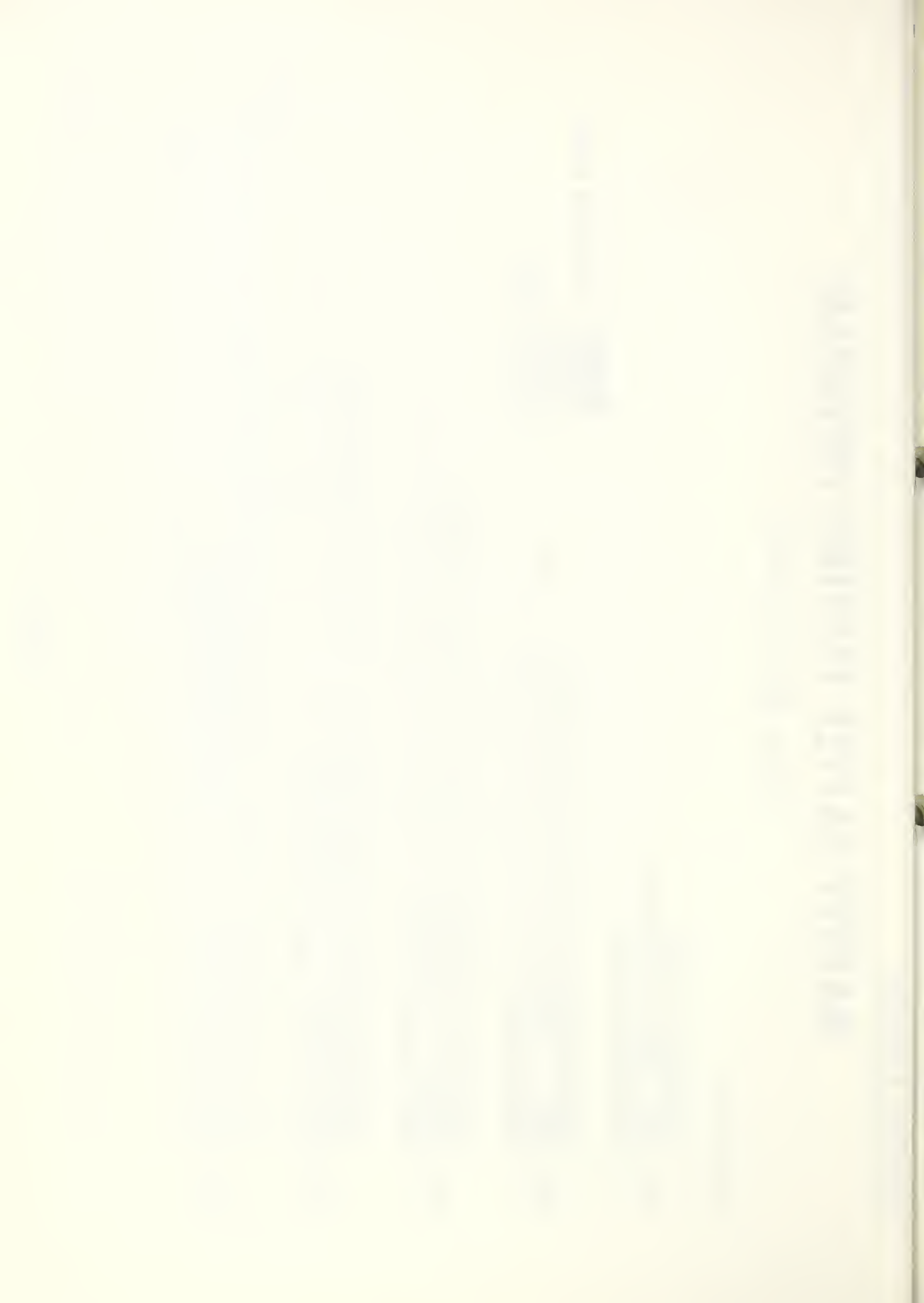


FIGURE 7

MARKET CATTLE TESTING PROGRAM

Cows Blood Tested





Brucellosis Eradication

Fiscal Year 1965

State	FEDERAL			COOPERATORS		
	Indemnity Payments	Operating Cost	Total	Indemnity Payments	Operating Cost	Total
Alabama	\$186,375	\$549,042	\$735,417	\$25,505	\$476,200	\$501,705
Alaska	- -	18,132	18,132	- -	23,000	23,000
Arizona	775	176,164	176,939	775	122,457	123,232
Arkansas	51,833	548,835	600,668	- -	401,603	401,603
California	30,385	710,816	741,201	61,479	980,929	1,042,408
Colorado	- -	416,146	416,146	17,323	281,577	298,900
Connecticut	299	66,336	66,635	1,081	95,178	96,259
Delaware	289	39,930	40,219	261	48,080	48,341
Florida	11,529	460,085	471,614	22,491	459,189	481,680
Georgia	33,952	445,584	479,536	32,573	615,237	647,810
Hawaii	2,227	68,879	71,106	3,018	141,119	144,137
Idaho	4,770	361,200	365,970	2,208	273,148	275,356
Illinois	83,156	279,478	362,634	91,869	671,340	763,209
Indiana	22,115	229,827	251,942	- -	592,002	592,002
Iowa	96,961	1,292,510	1,389,471	147,575	1,020,585	1,168,160
Kansas	67,920	464,411	532,331	- -	827,148	827,148
Kentucky	81,120	395,213	476,333	150	707,047	707,197
Louisiana	111,158	605,539	716,697	16,927	556,741	573,668
Maine	217	107,802	108,019	235	84,687	84,922
Maryland	4,852	271,114	275,966	7,500	361,770	369,270
Massachusetts	1,245	113,811	115,056	1,266	204,160	205,426
Michigan	18,474	359,066	377,540	- -	760,647	760,647
Minnesota	16,931	594,884	611,815	10,958	793,320	804,278
Mississippi	63,104	454,376	517,480	- -	375,969	375,969
Missouri	23,291	528,385	551,676	23,291	1,068,148	1,091,439
Montana	- -	215,270	215,270	- -	352,427	352,427
Nebraska	12,016	468,365	480,381	6,817	658,044	664,861
Nevada	175	142,752	142,927	- -	123,365	123,365
New Hampshire	583	38,236	38,819	1,166	45,693	46,859
New Jersey	2,400	153,478	155,878	6,895	136,666	143,561
New Mexico	175	115,893	116,068	200	89,231	89,431
New York	- -	264,320	264,320	- -	805,505	805,505
North Carolina	8,519	228,799	237,318	4,510	335,448	339,958
North Dakota	13,161	257,396	270,557	- -	422,152	422,152
Ohio	- -	242,888	242,888	- -	498,416	498,416
Oklahoma	237,096	787,614	1,024,710	- -	795,511	795,511
Oregon	3,698	244,291	247,989	4,391	236,784	241,175
Pennsylvania	10,471	270,713	281,184	13,452	1,094,130	1,107,582
Rhode Island	10	25,166	25,176	220	36,551	36,771
South Carolina	9,759	314,441	324,200	19,000	239,459	258,459
South Dakota	28,921	366,949	395,870	25,481	375,585	401,066
Tennessee	111,819	516,433	628,252	- -	555,335	555,335
Texas	- -	1,049,829	1,049,829	- -	1,040,319	1,040,319
Utah	- -	150,586	150,586	- -	121,566	121,566
Vermont	972	115,730	116,702	1,574	101,152	102,726
Virginia	19,967	282,021	301,988	- -	433,340	433,340
Washington	3,857	311,206	315,063	4,007	292,454	296,461
West Virginia	3,297	211,978	215,275	4,087	225,733	229,820
Wisconsin	10,421	679,773	690,194	32,093	967,946	1,000,039
Wyoming	875	213,522	214,397	- -	188,344	188,344
Puerto Rico	68,969	228,175	297,144	68,419	264,088	332,507
Virgin Islands	- -	19,272	19,272	- -	18,000	18,000
Div. Hdqrs., and Regional Admin. Divisions a/	- -	1,560,846	1,560,846	- -	- -	- -
TOTAL	1,460,139	19,033,507	20,493,646	658,797	22,394,525	23,053,322

a/ Includes all ARS administrative and MODE costs.

Date	Description	Amount	Balance
1/1/1900	To Balance	100.00	100.00
2/1/1900	By Cash	50.00	50.00
3/1/1900	To Cash	25.00	75.00
4/1/1900	By Cash	15.00	60.00
5/1/1900	To Cash	10.00	70.00
6/1/1900	By Cash	5.00	65.00
7/1/1900	To Cash	10.00	75.00
8/1/1900	By Cash	5.00	70.00
9/1/1900	To Cash	10.00	80.00
10/1/1900	By Cash	5.00	75.00
11/1/1900	To Cash	10.00	85.00
12/1/1900	By Cash	5.00	80.00
1/1/1901	To Cash	10.00	90.00
2/1/1901	By Cash	5.00	85.00

Continued on next page

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL HEALTH DIVISION

SUMMARY OF BOVINE BRUCELLOSIS ERADICATION ACTIVITIES IN COOPERATION WITH THE STATES

FISCAL YEAR 1965

State or Territory	BRUCELLOSIS BLOOD TESTS				BRUCELLOSIS RING TESTS - HERDS			CALVES VACCINATED
	Cattle	Reactors			Total	Suspicious		
		Number	* Percent	** Percent		Number	Percent	
Alabama	439,610	12,106	2.75	2.30	4,092	131	3.2	123,169
Alaska	599	0	0.00	0.00	37	0	0.0	129
Arizona	39,718	40	0.10	0.06	840	9	1.1	12,770
Arkansas	259,930	3,643	1.40	1.01	15,208	171	1.1	131,407
California	296,433	1,308	0.44	0.12	21,334	538	2.5	423,435
Colorado	181,286	812	0.45	0.31	9,267	92	1.0	132,208
Connecticut	55,247	17	0.03	0.02	6,088	37	0.6	15,922
Delaware	23,613	72	0.30	0.19	1,419	9	0.6	3,176
Florida	261,832	3,839	1.47	1.03	2,475	493	19.9	143,086
Georgia	237,534	2,443	1.03	0.74	7,079	120	1.7	39,010
Hawaii	30,824	168	0.55	0.43	159	0	0.0	12,600
Idaho	105,450	416	0.39	0.15	34,142	308	0.9	166,502
Illinois	238,093	2,941	1.24	0.62	51,476	438	0.9	119,442
Indiana	237,804	847	0.36	0.15	47,650	324	0.7	68,245
Iowa	755,172	7,877	1.04	0.54	102,527	1,198	1.2	397,169
Kansas	266,751	3,484	1.31	0.59	48,704	515	1.1	357,018
Kentucky	224,529	4,134	1.84	1.18	77,596	1,848	2.4	98,515
Louisiana	350,122	9,529	2.72	2.05	5,181	232	4.5	103,118
Maine	43,813	35	0.08	0.03	6,173	30	0.5	15,708
Maryland	258,329	166	0.06	0.05	18,308	368	2.0	34,938
Massachusetts	46,703	99	0.21	0.09	7,962	47	0.6	13,314
Michigan	174,210	745	0.43	0.10	104,767	1,720	1.6	132,389
Minnesota	493,010	2,783	0.56	0.17	226,106	711	0.3	191,892
Mississippi	298,939	10,179	3.41	2.26	15,669	514	3.3	128,819
Missouri	497,410	2,147	0.43	0.26	89,354	818	0.9	370,005
Montana	122,731	212	0.17	0.15	9,405	21	0.2	267,367
Nebraska	278,895	1,215	0.44	0.25	51,302	284	0.6	363,601
Nevada	14,504	5	0.03	0.02	625	0	0.0	63,813
New Hampshire	51,939	27	0.05	0.03	4,267	32	0.7	9,698
New Jersey	84,195	87	0.10	0.05	6,298	141	2.2	13,820
New Mexico	53,297	148	0.28	0.26	1,492	92	6.7	15,270
New York	133,753	379	0.28	0.03	100,899	194	0.2	241,322
North Carolina	300,351	454	0.15	0.10	18,251	167	0.9	28,617
North Dakota	157,652	1,848	1.17	0.50	49,788	291	0.6	254,549
Ohio	238,166	1,082	0.45	0.18	83,818	838	1.0	80,773
Oklahoma	594,356	15,972	2.69	2.45	10,596	266	2.5	221,113
Oregon	151,316	240	0.16	0.10	12,274	201	1.6	97,899
Pennsylvania	555,516	358	0.06	0.02	87,668	233	0.3	136,520
Rhode Island	8,925	2	0.02	0.01	1,156	5	0.4	1,440
South Carolina	149,445	498	0.33	0.26	4,654	26	0.6	24,067
South Dakota	203,232	2,965	1.46	0.49	36,459	629	1.7	341,764
Tennessee	120,654	4,537	3.76	0.75	88,612	1,117	1.3	176,252
Texas	1,197,494	25,285	2.11	1.76	14,587	649	4.4	309,516
Utah	29,059	180	0.62	0.15	15,277	47	0.3	69,417
Vermont	38,061	46	0.12	0.03	18,277	19	0.1	43,832
Virginia	250,983	1,166	0.46	0.31	38,995	538	1.4	76,155
Washington	197,506	201	0.10	0.05	14,960	88	0.6	52,030
West Virginia	143,137	340	0.24	0.21	8,837	44	0.5	7,191
Wisconsin	282,452	318	0.11	0.01	247,303	341	0.1	528,434
Wyoming	52,943	168	0.32	0.22	2,983	8	0.3	164,706
Puerto Rico	249,046	1,636	0.66	0.55	3,167	322	10.7	9,242
Virgin Islands	3,008	0	0.00	0.00	5	0	0.0	0
TOTALS	11,479,577	129,199	1.11	0.52	1,835,568	17,264	0.9	6,832,394

*Percent of cattle infection, blood tests only.
**Percent of cattle infection calculated on the basis of total blood tests and actual number of individual BRT negative cattle.

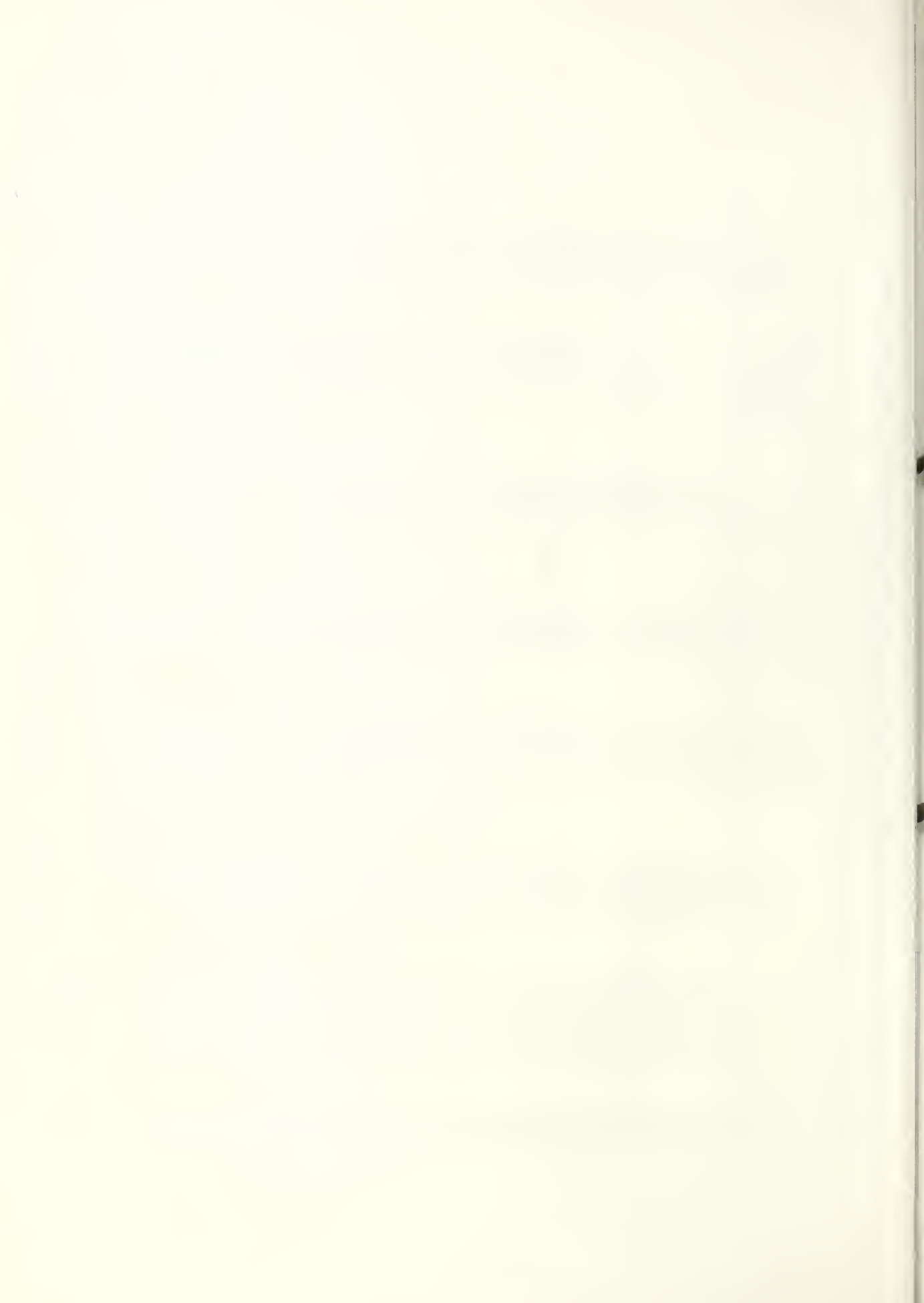
TABLE 4



STATEMENT OF COOPERATIVE BRUCELLOSIS TESTING AND INDEMNITIES IN BRUCELLOSIS ERADICATION WORK
FISCAL YEAR 1935 THROUGH 1965 INCLUSIVE

Fiscal Year	Cattle	Reactors Number	Reactors on Which Indemnity Was Paid	Indemnity Paid By			
				Federal		State	
				No. of States in which Paid	Average Amount	No. of States Paying Indemnity	Average Amount
			Figures not available	Figures not available	\$		
1935	3,317,760	381,010	439,041	48	24.29	1	\$ 27.99
1936	6,674,709	457,104	352,092	48(a)	26.86	2	20.57
1937	8,021,167	397,864	278,619	47(a)	26.45	5	19.25
1938	7,837,443	324,532	182,285	47	26.69	10	20.36
1939	7,591,398	219,165	119,660	36	20.00	28	26.09
1940	6,937,428	171,953	129,225	39	14.96	36	17.12
1941	7,465,254	182,075	127,274	41	15.19	39	17.19
1942	6,891,219	209,238	91,065	39(a)	15.83	41	17.71
1943	5,185,228	197,329	81,677	40(a)	16.77	39(a)	18.63
1944	5,235,912	226,079	89,766	39(a)	19.30	40(a)	22.54
1945	5,213,458	243,050	82,586	40(a)	19.25	39(a)	22.14
1946	4,876,866	245,786	62,115	39(a)	19.34	39(a)	22.07
1947	5,133,814	232,293	51,111	39(a)	20.64	40(a)	23.44
1948	5,434,792	232,199	43,237	37(a)	21.17	39(a)	24.44
1949	5,671,347	226,691	34,759	31(a)	23.41	37(a)	25.67
1950	5,974,721	208,298	29,322	27(a)	22.75	31(a)	25.16
1951	5,640,836	172,322	23,456	25(a)	21.74	27(a)	24.27
1952	7,491,327	314,260	39,485	24(a)	24.05	25(a)	26.03
1953	7,860,870	268,348	139,159	25(a)	22.32	24(a)	25.59
1954	9,002,109	235,666	231,687	41(a)	11.71	25(a)	20.64
1955	14,186,241	365,247	166,737	40(b)	20.65	26(a)	20.85
1956	16,754,195	366,524	146,843	43(a)	23.21	25(b)	22.33
1957	15,913,396	280,253	94,836	44(c)	22.29	28(a)	19.64
1958	16,251,440	260,322	65,158	45(d)	22.12	30(c)	19.58
1959	14,168,909	214,331	66,670	46(e)	21.74	30(d)	21.79
1960	12,468,476	147,805	61,484	42(a)	21.84	31(e)	22.86
1961	13,418,657	139,894	53,852	41(e)	22.55	29(a)	26.92
1962	11,966,324	126,839	55,696	42(e)	22.70	28(e)	20.33
1963	11,299,205	132,370		41(e)	22.41	29(e)	24.36
1964	11,693,927	134,614		42(e)	20.41	31(e)	21.99
1965	11,479,577	129,199		43(a)	21.89	31(a)	20.84

- (a) Plus Puerto Rico
(b) Plus Puerto Rico and Alaska
(c) Plus Puerto Rico, Alaska, Hawaii, and Virgin Islands
(d) Plus Puerto Rico, Hawaii and Virgin Islands
(e) Plus Puerto Rico and Virgin Islands



SHEEP SCABIES ERADICATION

October 1965

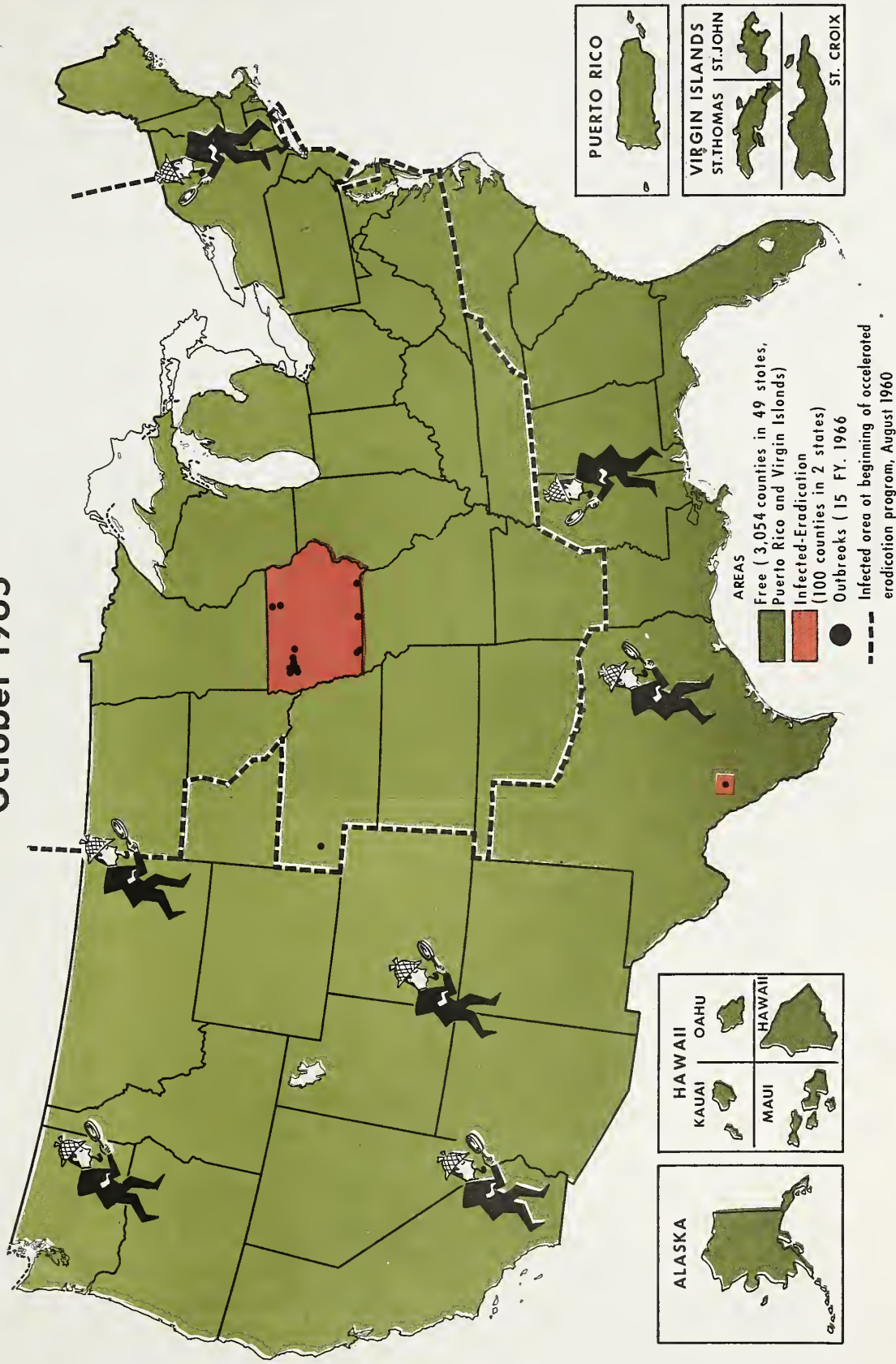


FIGURE 9

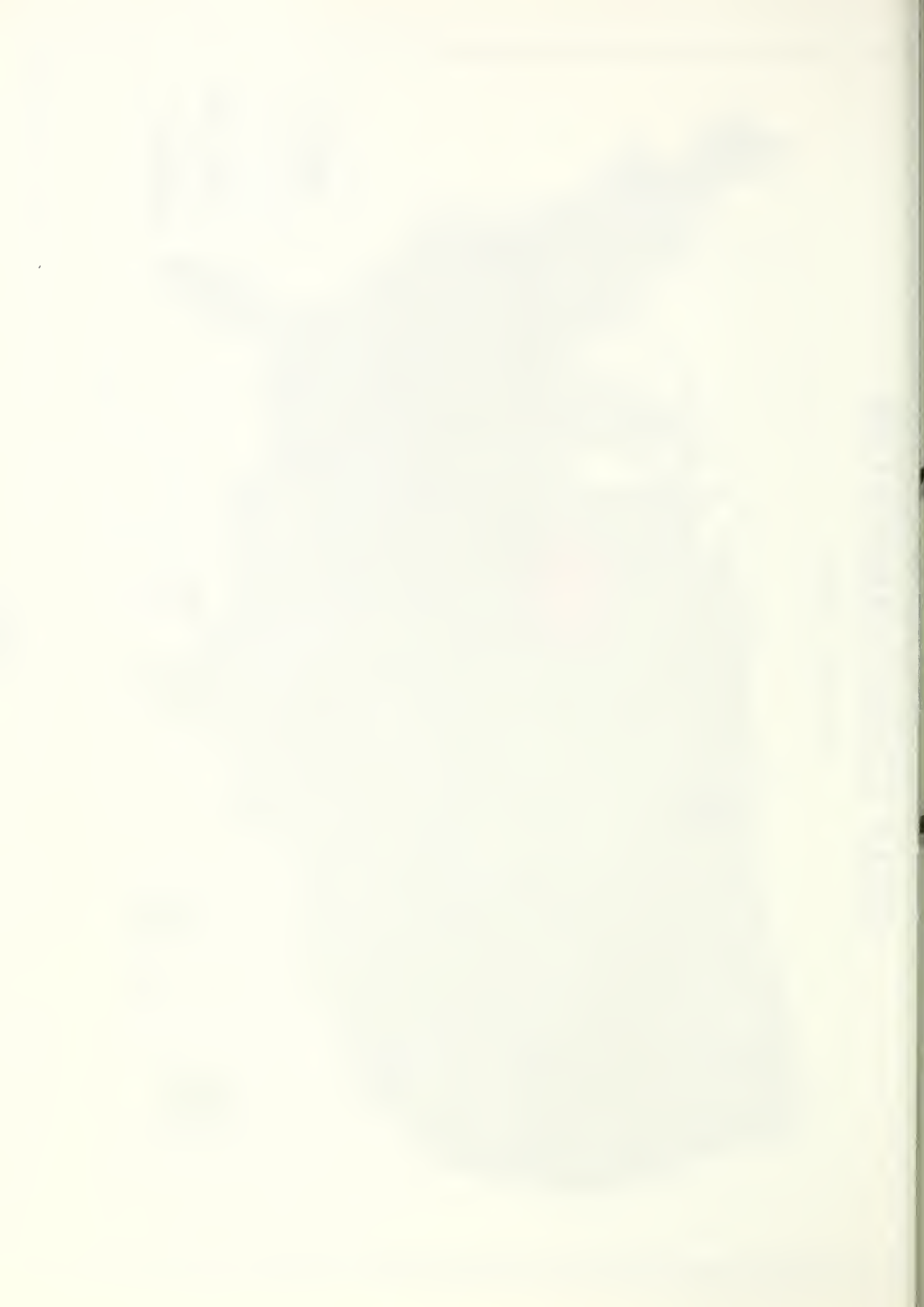


Figure 10 indicates the sources of scabies infestation during F.Y. 1965. These sources reveal a need for increased inspections of sheep owned by dealers and followup of sales by them from infected and exposed premises. Auction markets are involved in a large number of outbreaks. There is a need for continuation of close inspection of sheep going through these markets and followup inspection of shipments of infected or exposed animals going out of these markets to feedlots or farms.

c. Cattle scabies inspections increased. During fiscal year 1965, a total of 18,389,000 cattle were inspected on farms compared to 17,260,000 in 1964. Four outbreaks were disclosed involving 929 infested animals in widely scattered areas in the States of California, Kansas, Texas and New York. This is the first instance of cattle scabies in New York in over 10 years.

A large number of the inspections on farms were accomplished by inspections made by regulatory inspectors when on farms for other purposes. Increased inspections of cattle in feedlots, those handled by dealers, and those moving through auction markets, must be made to locate the last case of cattle scabies. Present day rapid movements of livestock add to the difficulty in making necessary inspections.

4. Cattle fever tick eradication.

In fiscal year 1965, cattle fever ticks, Boophilus annulatus and Boophilus microplus, were again prevented from becoming established in the United States. In the Texas buffer zone bordering that part of Mexico, which is considered to be tick infested, 218 livestock illegally entering the United States were apprehended during the fiscal year. Of these, 11 were found tick infested.

In addition, almost 2 million livestock were inspected for evidence of ticks throughout the buffer zone. Thus, continued vigilance by Department personnel constantly patrolling the border from Brownsville to Del Rio, Texas, successfully prevented cattle fever ticks from becoming reestablished in the subtropical regions of the United States. Similar activities on a smaller scale in Florida and Puerto Rico also prevented these ticks from becoming reestablished. Cattle fever ticks may spread bovine piroplasmosis--a severe and often fatal disease of cattle. This costly disease was eliminated from the United States by a tick eradication program earlier in this century.

5. Hog cholera eradication:

a. Cooperative program continues excellent progress. At the end of fiscal year 1965, 49 States were actively participating in the cooperative eradication program. With the addition of the State of Texas in the current fiscal year, all States are now actively engaged in the eradication program. In September Nevada become the second hog cholera free State (See Figure 11).

Nine Corn Belt States with about 75 percent of the Nation's swine production showed marked reduction in the incidence of hog cholera during 1965. Confirmed outbreaks in the Corn Belt States dropped from 595 in 1964 to 378 in 1965, a decrease of 37%.

b. Swine producers maintain vaccination levels in support of program. Vaccination against hog cholera is a strong factor in preventing spread of the disease and is an important part of total program effort in areas where the disease is endemic. The cost of vaccination is borne voluntarily by the swine producers. In spite of a marked decrease in incidence of the disease since the program was initiated, as well as a decrease in swine producing during 1965, swine producers continued to maintain vaccination at a level comparable to previous years.

c. Outbreaks due to interstate shipment reduced. Federal interstate shipping requirements for swine, designed to support the eradication program, were adopted at the beginning of the program and further strengthened in 1965. During 1965, only 23 outbreaks associated with interstate movement of swine were reported, as opposed to 44 in 1964 -- a drop of 48 percent.

d. Guidelines for diagnosis established. During 1965, guidelines for diagnosis of hog cholera were approved and adopted by a special committee representing the United States Livestock Sanitary Association, the Conference of Veterinary Laboratory Diagnosticians, and the Department. The diagnostic guides, under field and laboratory study for two years, include newer laboratory aids, such as rapid microscopic examination of tissues submitted from the field and a rapid test for virus content using immunofluorescence. A technical motion picture, based on these guidelines, was produced for use by veterinarians in public service and private practice and in the veterinary colleges.

6. Screwworm Eradication.

a. Screwworm cases in southwestern United States remain at low level. In the southwestern screwworm eradication area, losses from screwworms were insignificant during fiscal year 1965. An index of the progress made in the screwworm eradication program in the United States is the comparison of the 5,189 laboratory-confirmed cases during fiscal year 1964, with 611 such cases reported during fiscal year 1965.

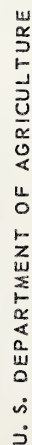
b. Arizona and California enter screwworm eradication program. Another important achievement during the fiscal year was the inclusion of Arizona and California in the eradication program. Sterile fly distribution centers were established at Douglas and Yuma in the State of Arizona to service the needs of Arizona and California in the eradication program. The addition of these two States extends the sterile fly barrier to the Pacific Ocean, and brings all screwworm areas in the continental United States under the program.

######



Hog Cholera Eradication Program

November 15, 1965



AGRICULTURAL RESEARCH SERVICE

FIGURE 11

c. Screwworm fly rearing techniques improved. The use of spray dried blood instead of fresh blood in the larvae rearing media has resulted in greater efficiency in production of screwworm flies. Dried blood can be stored in sufficient quantity to assure a constant supply. Fresh animal blood used previously is a perishable product and is often difficult to secure as it is needed. Spray dried plasma has also been successfully substituted for fresh blood plasma in the larvae rearing media. A cheaper egg collection process has been developed using a sponge soaked in special egg laying media instead of fresh horse meat.

d. Screwworm case reporting system vastly improved in Mexico. The efficiency of the screwworm case finding and reporting system in Mexico has been more than doubled in fiscal year 1965. In fiscal year 1964, 2,451 laboratory-confirmed cases of screwworms occurred along with 509 laboratory-confirmed cases of non-screwworms, making a total of 2,960. This figure more than doubled in fiscal year 1965 when 6,213 laboratory-confirmed cases of screwworms were reported along with 1,218 cases on non-screwworms, making a total of 7,431 cases. This increase in reporting efficiency is doubly significant when it is realized that native screwworm populations in much of northern Mexico have been reduced, due to prolonged release of sterile flies in the Mexican portion of the barrier zone. A stepped up information program among the livestock producers has resulted in an increase of cooperation on their part.

e. Southeast remains screwworm-free. One of the most important achievements of the Screwworm Eradication Program is preservation of the screwworm-free status of the Southeast throughout fiscal year 1965. In addition, no cases of screwworm were found north or east of Texas during the fiscal year. The last screwworm case found east of Texas was disclosed in Louisiana in October of 1962.

7. Diagnosis, control and eradication of miscellaneous diseases

a. Modified scrapie eradication program. During fiscal year 1965, the cooperative scrapie eradication program was modified by allowing the retention of non-bloodline animals in infected or source flocks under certain conditions, and in flocks into which the exposed animals had been sold. The retained animals are held under quarantine for 24 months with monthly surveillance and an additional 18 months under semi-annual surveillance inspection. During fiscal year 1965 there were 12 infected flocks in 7 States. Federal and cooperative indemnities were as follows:

	<u>F.Y. 1964</u>	<u>F.Y. 1965</u>
Federal.....	\$413,327	\$94,988
State.....	<u>150,668</u>	<u>37,693</u>
Total.....	<u>563,995</u>	<u>132,681</u>

Federal amounts represent obligations, cooperator amounts reflect payments reported by the close of the Federal fiscal year.

The study of the scrapie eradication program following the scrapie seminar and the agreed modifications in the program provided closer cooperation between the Department and State regulatory officials and the U. S. Livestock Sanitary Association. This represented considerable progress and should help materially in lessening the controversy which has made the eradication of disease more difficult.

b. Diagnosis of suspected vesicular diseases. During fiscal year 1965, veterinary diagnosticians conducted 352 investigations for suspected vesicular disease of which 220 cases were confirmed positive for vesicular stomatitis. All cases were determined to be negative for foot-and-mouth disease and vesicular exanthema.

c. Many States protected from equine piroplasmosis. In Florida, during fiscal year 1965, only 5 new cases of equine piroplasmosis were disclosed in 4 southern counties. This disease was prevented from spreading throughout the United States even though some 8,000 horses that spend part of the year in Florida have been moved to nearly every other State in the Union. A cooperative vector control program consisting of inspection and spraying horses and premises with tickicides every 21 days was continued for the control of equine piroplasmosis. State quarantines of premises with known infected horses were continued, which aided in the prevention of the spread of the disease. During the year, 34 of the 69 premises under State quarantine in Florida were released in accordance with approved State-Federal procedures.

d. Control of poultry diseases. Sanitation guidelines for Salmonella control were developed and distributed in cooperation with National Renderers Association and National Fisheries Institute, professional groups, and other Government agencies. Many processors of animal and poultry byproducts and fish meal have applied these guidelines and are reporting improvement in producing Salmonella-free feed ingredients.

Minnesota has successfully completed the second year of the official M. gallisepticum program for the eradication of infectious sinusitis in turkeys. Condemnation losses in Minnesota from this disease continue below the national average (23 less birds per 10,000). Outbreaks of the disease were successfully checked and traced to the source of origin (out-of-State flocks).

Epidemiological questionnaires relating to avian leukosis were completed on 150 flocks in 10 States. Evaluation of this survey is expected to give leading information on the correlation between management practices and incidence of leukosis in chickens. This will give valuable assistance to research and shorten the time needed to develop a control program against leukosis.

8. Supervision over Interstate Movement of Livestock

a. Livestock on the move inspected for diseases. During 1965 over 20 million cattle, 24 million swine, and 7 million sheep were given a health inspection at Federally inspected stockyards and along lines of transportation. Several hundred thousand animals were found to be affected with diseases and were safely handled so as to prevent the spread of disease in interstate trade channels.

b. The following data show the comparative volume of activity at the public stockyards in the fiscal years 1964, 1965 and estimates for 1966:

	<u>F.Y. 1964</u>	<u>F.Y. 1965</u>	<u>Estimated F.Y. 1966</u>
Number of stockyards.....	60	60	59
Number of cities in which located	55	55	54
Animals inspected:			
Cattle.....	19,912,734	20,508,076	20,600,000
Sheep.....	8,509,121	7,123,955	7,100,000
Swine.....	<u>26,726,397</u>	<u>24,221,760</u>	<u>24,200,000</u>
Total animals inspected.....	55,148,252	51,853,791	51,900,000
Animals dipped and immunized:			
Cattle dipped.....	43,333	50,132	50,000
Sheep dipped.....	155,126	156,762	155,000
Swine immunized.....	<u>150,970</u>	<u>113,074</u>	<u>115,000</u>
Total animals dipped and immunized	349,429	319,968	320,000
Health certificates issued for			
shipments.....	274,842	266,690	267,000
Infectious cars received.....	34	31	30
Cars cleaned and disinfected.....	422	283	285
Trucks cleaned and disinfected....	17,685	14,100	14,100
Diseased animals received.....	536,736	501,660	500,000

c. 28-Hour law violations reduced. During the fiscal year, 331 reports of 28-Hour Law violations were received, compared to 590 during fiscal year 1964. Heavy emphasis has been placed on preventing violations by means of thorough checking of records at feed, water, and rest stations.

There were 235 violation cases referred to the Office of the General Counsel for prosecution. In addition, 155 cases were closed because further investigation indicated there was actually no overconfinement

or circumstances beyond the control of the violator resulted in the overconfinement. During 1965, notification was received from the Office of the General Counsel as to the results of 263 prosecutions, showing penalties in the amount of \$29,475.

Inspections of approximately 600 feed, water, and rest stations were made every six months by field employees, and needed repairs and additions were suggested and promptly carried out by the railroads. Stations no longer properly equipped were removed from the list of approved feed, water, and rest stations. Every effort was made to secure good cooperation from railroad officials and compliance with the humane intent of the 28-Hour Law.

d. Enforcement of interstate regulations prevents spread of disease.

During fiscal year 1965, 502 reports of apparent violations were received. In the course of processing these cases, and/or cases previously reported, the Division also received 221 supplemental reports in response to requests for certain additional evidence to support the alleged violations. Investigation and processing were completed on 187 cases which were forwarded to the Office of the General Counsel with recommendations as to their disposition. An additional 37 cases were closed when further investigation disclosed that either a violation did not actually occur or the circumstances surrounding such incidents indicated that successful prosecution could not be expected.

Also, during the period, notice was received of 86 cases terminated by successful court action. An additional 115 cases were terminated by warning letters issued to the violators by various United States Attorneys, or with the concurrence of the Justice Department. Of the cases terminated by court action, many of the defendants were fined more than the statutory minimum of \$100, with the fines ranging up to \$600.

9. Port-of-entry animal inspection and quarantine again prevented entry of foreign diseases into the United States.

Notwithstanding the increasing danger, port of entry inspection and quarantine activities during fiscal year 1965 continued to prevent the introduction into the United States of foreign animal diseases and vectors of disease. Particular attention was continued toward the possibility of Cuban refugees bringing in clothing, footwear and personal effects that might be infected with foot and mouth disease virus.

a. The following table shows the number of animals, including poultry and certain poultry products inspected during fiscal year 1965:

Description	Inspections			Total	Refused Entry
	Border Ports		Air and Ocean Ports		
	Canadian	Mexican			
Animals:					
Cattle.....	271,685	394,889	595	667,169	19,485
Swine.....	5,810	6	252	6,068	16
Sheep.....	13,857	1	388	14,246	1
Goats.....	75	12	408	495	1
Horses.....	12,817	2,803	913	16,533	77
Mules.....	26	5	--	31	--
Burros.....	106	--	--	106	--
Zoo animals.....	--	--	195	195	9
Miscellaneous.....	343	70	67	480	3
Total animals.....	304,719	397,786	2,818	705,323	19,592
Poultry.....	1,037,324	--	521,546	1,558,870	1,993
Hatching Eggs.....	1,133,566	--	456,950	1,590,516	11,397
Grand Total.....	2,475,609	397,786	981,314	3,854,709	32,982

b. Inspection of imported animal products and related materials.

Each year animal products are brought in from many foreign countries for agricultural, industrial, or pharmaceutical purposes. These products and related materials are permitted entry only under rigid regulations requiring careful inspection at ports of entry, since they present a very real danger of foreign disease introduction. Those subject to further regulatory action are shipped to approved destination establishments under seal where they are processed under further supervision. Such importations in fiscal year 1965 included:

	<u>million pounds</u>
Hides and skins.....	140.1
Animal casings.....	21.5
Wool and hair.....	658.4
Bones and bonemeal.....	88.7
Gluestock.....	47.8
Meatmeal.....	22.6
Horsemeat.....	21.0
Dried milk products.....	79.5
Waste bagging.....	85.4
Miscellaneous.....	6.5
Total.....	<u>1,171.5</u>

In addition to the foregoing, 46,843 lots of prohibited or restricted meats and animal products were intercepted from passenger baggage, from mail and express shipments, and from foreign ships and planes, an increase of 10% over fiscal year 1964. The items were destroyed by incineration and all contaminated areas were disinfected. Emphasis was continued on efforts to inform the public about inspection and quarantine restrictions as the increased volume of foreign trade and travel intensifies the risk of introducing exotic diseases.

c. Permanent post-entry control of certain zoo animals. Fiscal year 1965 marked a large increase in the importation of wild ruminants for zoological purposes primarily because of fear that some of the species, particularly on the continent of Africa, might become extinct. These zoo animals, following minimum 60-day quarantine at the port of embarkation and minimum 30-day quarantine at the U.S. port of entry, were consigned to specifically approved zoological parks that meet prescribed standards. During the Fiscal Year, 186 wild ruminants were entered, bringing to 559 the number consigned to 43 approved zoos for permanent post-entry control. The existence of external parasites on zoo animals at the time they are inspected when offered for entry into the United States continues to be a problem despite precautionary treatment in the country of origin. Repeated precautionary were necessary before the animals could be released from the port of entry quarantine for consignment to the specifically approved zoo.

d. Laboratory screening tests detect carrier animals at ports of entry. Dourine and glanders of horses have been eradicated from the United States, but may be reintroduced and become established by importation of apparently healthy but carrier animals. Laboratory examination of 6,958 serum samples disclosed 2 positive or suspicious for dourine and 13 for glanders. Glanders is also transmissible to humans and is frequently fatal. All animals not negative to tests were refused entry and destroyed or returned to point of origin.

Veterinary Biologics Regulation.

1. Field activities re-aligned extensively. Over the years, program activities under the Virus-Serum-Toxin Act have evolved and expanded from a regulatory program largely concerned with hog cholera biologics to a highly specialized veterinary medical function. Utilization of the latest technological advancements is necessary to assure the safety and potency of the large variety of veterinary biologics used for the protection of the nation's livestock and food supply. With the introduction of new products and new scientific methods and techniques in the veterinary biologics' industry, a re-alignment of Federal regulatory activities was required in order to be responsive to these changing conditions and to meet future requirements. Under the re-alignment, the field inspection force headquarters is now located at Ames, Iowa near the National Animal Disease Laboratory. There are other inspection personnel headquartered at Kansas City, Kansas concerned principally with production of hog cholera products. This provides greatly increased coordination of inspection work with the laboratory testing of samples submitted for check-testing by the manufacturer. It is expected that the greater utilization of laboratory results and findings will improve inspection activities.
2. Licensing. During fiscal year 1965 licenses under the Virus-Serum-Toxin Act to prevent the production and marketing of worthless, contaminated, and dangerous or harmful biologics permitted the manufacture of 232 different biologics at 58 licensed establishments.

Improvements and new developments were made in 17 test procedures to be used as a basis for releasing biologics. These procedures were issued as standard requirements under Biological Products Memorandum No. 60.2, making a total of 51 which have been issued by the end of fiscal year 1965 in the standard test requirement series.

Veterinary biologics are products of science produced from disease organisms, or derivatives of these organisms, and are used in diagnosing, preventing or treating over 56 different disease conditions in animals. Some of these diseases are transmissible to man. Standard test requirements are the scientific means or tools by which the safety and efficacy of veterinary biologics under the Virus-Serum-Toxin Act are determined.

3. Inspection. During fiscal year 1965, inspection of the production and testing of a total of 13,550 production lots was carried out at 58 licensed establishments. Samples of each production lot were collected and forwarded to the biologics control laboratory, National Animal Disease Laboratory, for examination and testing.

4. Testing. Testing of commercially produced veterinary biologics at the National Animal Disease Laboratory during the year included those products used in national disease eradication or control programs such as hog cholera products, Brucella abortus vaccines and antigens, pullorum antigens and tuberculin, and other priority products such as vaccines for blackleg, leptospira, bovine rhinotracheitis, erysipelas, Newcastle disease, bronchitis, canine distemper, and rabies. Assays were made including those for sterility, purity, safety and potency.

Emphasis is placed on check-testing samples of licensed veterinary biologics through potency test methods in order to determine product efficacy and safety. At the same time, this permits detection of any contaminated or impotent products as well as products otherwise unsafe for use in animal disease protection. When feasible, testing of some veterinary biological products is conducted in host animals and the results correlated with check-testing in laboratory animals. As results of the check-tests reveal unsatisfactory products, the inspection force initiates immediate corrective action at the production plant level.

A total of 3,916 production lots were examined and tested. As many as 246 or 6.3% of the lots tested which had previously been found satisfactory by the manufacturers' own required tests were found to be worthless or substandard. Such lots which had been released prior to assays were removed from the market.

The following table reflects activities for the licensing, production and testing of veterinary biologics:

	Fiscal Years		Estimated
	<u>1964</u>	<u>1965</u>	<u>1966</u>
Summary of check-testing of production samples at National Animal Disease Laboratory:			
Biological products tested	68	92	95
Lots tested.....	3,521	3,916	4,064
Lots unsatisfactory.....	275	246	256

		Fiscal Years		Estimated
		1964	1965	1966
Licensed establishments		61	58	60
Types of biologics produced ..		218	232	241
Approved licenses		1,229	1,289	1,340
Production:				
Biologics (other than hog cholera products):				
Vaccines	Lots	5,652	5,480	5,700
	Doses	4,913,784,482	4,462,119,403	4,649,640,000
Bacterins	Lots	6,415	5,338	5,575
	Doses	194,948,480	177,280,130	184,725,000
Serums	Lots	694	618	645
	Doses	8,152,582	6,010,331	6,295,000
Mixed bacterins	Lots	340	307	320
	Doses	8,682,900	7,003,723	7,320,000
Antigens	Lots	138	158	165
	Doses	53,933,415	47,627,605	49,660,000
Antitoxins	Lots	139	120	125
	Doses	7,380,291	5,717,276	5,980,000
Toxoids, miscellaneous.	Lots	170	156	165
	Doses	6,457,015	6,173,573	6,430,000
Subtotals	Lots	13,548	12,177	12,695
	Doses	5,193,339,165	4,711,932,041	4,910,500,000
Hog Cholera Products:				
a) Vaccines	Lots	844	748	780
	Doses	50,473,019	42,852,361	44,720,000
b) Serums	Lots	948	545	575
	Doses	26,798,231	17,826,353	18,720,000
c) Virus	Lots	150	80	85
	Doses	807,800	461,485	487,000
Subtotals ...	Lots	1,942	1,373	1,440
	Doses	78,070,050	61,140,199	63,927,000
Grand Totals	Lots	15,490	13,550	14,135
	Doses	5,271,418,215	4,773,072,240	4,973,977,000

Pesticides Regulation

Current Activities: Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, insecticides, fungicides, rodenticides, sanitizers and disinfectants on inanimate surfaces; nematocides, herbicides, plant growth regulators, desiccants, defoliants, products for controlling, repelling or mitigating any mammal, bird, reptile, fish, or any other pest offered for interstate shipment or importation must be registered with the Department.

When an application for the registration is presented, convincing evidence must be submitted as to the safety and effectiveness of the product for its intended purpose when used as directed, in accordance with warnings and cautions on the label.

In the administration of the functions assigned by the Pesticides Chemical Amendment to the Food, Drug and Cosmetic Act, P. L. 518, the Department must certify to the Food and Drug Administration as to the usefulness of pesticide chemicals for which tolerances or exemptions therefrom have been requested by industry, and express an opinion as to whether the tolerance requested reasonably reflect the residues likely to remain on raw agricultural commodities from the directed use.

Selected Examples of Recent Progress:

1. Registration activities. During fiscal year 1965, a total of 3,974 new products were registered. Amended labeling, involving new uses, changes in claims or directions, or other labeling revisions were accepted for 8,073 previously registered products.

Labels submitted for 8,171 products were found to be unacceptable; however, many of these labels were corrected, resubmitted and accepted as new registrations or amendments. This was an increase of 72% in unacceptable labeling over the fiscal year 1964.

Label reviews and other registration matters amounted to 33,651 compared to 27,598 processed during 1964--an increase of 22%.

2. Enforcement activities. In fiscal year 1965, field inspectors collected 2,231 official samples of economic poisons from interstate shipments for chemical and/or biological testing. These activities provide the only means for locating and removing unregistered products and for determining that products which have been registered under the Act are being marketed as represented at the time of registration.

This was a reduction of 35 over 1964 occasioned by the need for temporary assignment of several field inspectors to work on registration matters.

A total of 2,955 tests were performed for the purposes of chemical, biological or efficacy analyses. This compares to a total of 2,157 such tests in 1964.

.3. Interdepartmental Coordination of Activities Relating to Pesticides

The review conducted under the Interdepartmental Agreement is progressing in an increasingly effective manner. The Department of the Interior, as a result of their review of a considerable number of labels, advised the Department of Agriculture of seven classes of pesticidal materials which are outside their sphere of interest. Labels for specific categories of use of these pesticides are omitted from listings sent to them. This allows more time for the Department of the Interior to review listings within its field of interest. The two Departments have concurred in objections to several use patterns for pesticides which would be hazardous to wildlife.

As a result of listings sent to the Department of Health, Education, and Welfare, numerous suggested label revisions were made relating to cautionary labeling, and when concurred in by the Department of Agriculture, label revisions were required.

(b) Foreign Currency Authorization Program

BASIS OF THE ESTIMATE

The 1967 Budget proposes establishment of a new authorization procedure for the use of foreign currencies previously those generated under Title I of Public Law 480 for agricultural research abroad. For several years foreign currencies for this work have been purchased with dollars appropriated under the former appropriation item Salaries and Expenses (Special Foreign Currency Program). The new procedure eliminates the requirement for a dollar appropriation to purchase these currencies. Beginning in 1967 expenditures would be made directly from currencies held by the Treasury, in accordance with the authorization in the annual appropriation Act. The amounts proposed in 1967 are as follows:

Guinea	49,300,000 francs
India	38,970,120 rupees
Israel	17,775,000 pounds
Pakistan	7,218,000 rupees
Poland	97,824,000 zlotys
Tunisia	104,200 dinars
UAR (Egypt)	86,600 pounds
Yugoslavia	4,375,000,000 dinars

These currencies have been determined by the Treasury Department to be in amounts in excess of anticipated normal U. S. requirements.

PROJECT STATEMENT
(In terms of dollar equivalents)

Note: The amounts shown below for 1965 and 1966 are obligations under the former appropriation item "Salaries and Expenses (Special Foreign Currency Program). In 1967 \$400,000 of this appropriation would be brought forward for use in that year.

This amount, together with the equivalent of \$23,788,000 proposed to be used under the new procedure, making a total available equivalent to \$24,188,000.

Project	1965	1966 (Estimated)	Increases + Decreases	1967 (Estimated)
1. Section 104(a):				
Market development re-				
search.....	\$3,485,840	\$2,907,282	-\$15,082(1)	\$2,892,200
2. Section 104(k):				
a. Agricultural and for-				
estry research	5,208,057	7,268,498	+139,302(1)	407,800
b. Translation and dis-				
semination of sci-				
entific publications	200,000	100,000	+188,000(2)	288,000
c. Research facilities.	- -	- -	+13,300,000(3)	13,300,000
3. Section 104(l):				
Office space and quarters	- -	- -	+300,000(4)	300,000
Total obligations.....	8,893,897	10,275,780	+13,912,220	24,188,000

	1965	1966 (Estimated)	Increases + Decreases	1967 (Estimated)
Unobligated balance, start of year	-14,569,677	-7,675,780	+7,275,780	-400,000
Unobligated balance, end of year	7,675,780	400,000	-400,000	- -
Total appropriation or es- timated authorization.....	2,000,000	3,000,000	+20,788,000	23,788,000

INCREASES AND DECREASES
(On basis of available funds)

(1) A net increase of \$124,220 for research operations under Section 104(a) and 104(k).

Total dollar equivalent of foreign currencies requested for research operations under this authorization is \$9,300,000, a net increase of \$124,220 over the estimated 1966 availability. This level of program is based on surveys of the scientific capability of foreign research institutions and evaluation of proposals submitted by those institutions which indicate that work beneficial to U. S. agriculture can be undertaken in Guinea, India, Israel, Pakistan, Poland, Tunisia, the United Arab Republic (Egypt) and Yugoslavia. This research would be designed to develop new foreign markets and to expand existing markets for agricultural commodities, including cotton, dairy products, fats and oils, grain, feed, live-stock and meat, poultry, and fruits and vegetables. It would also provide a mechanism for supplementing domestic research on farm, forest, marketing, utilization, agricultural economics, and human nutrition problems.

(2) An increase of \$188,000 for translation and dissemination of scientific publications.

For the past several years funds have been included under the appropriation Special Foreign Currency Program for translation of scientific publications authorized under section 104(k) of P. L. 480. Funds are included for the continued financial support for this project which has permitted the Department to obtain translation of a wide variety of scientific findings, now available in several foreign languages, that are of benefit to agricultural and forestry workers in the United States. This project augments the limited translations program carried on by the National Science Foundation on behalf of the Department.

It is also proposed to purchase and index books and periodicals for use in the National Agricultural Library or other libraries in the United States. These activities would be conducted under the authority of section 104(k) of P. L. 480 and be supported by currencies of India, Israel, and Poland. There are many scientific and technical publications in the agricultural and biological fields from these countries that would be helpful to the Department and to other United States scientists in the conduct of their research. Present library funds are not sufficient to purchase or index these additional publications.

(3) An increase of \$13,300,000 for construction of research facilities.

In certain excess currency countries there are existing institutions which have demonstrated capacity to perform high quality research which is of major importance to United States agriculture. Some of these institutions are limited in their ability to undertake such research because of inadequate plant and facilities. It is proposed that excess currencies be utilized to modernize or construct buildings and to provide facilities to enable expansion of research activity at such institutions.

Facilities would be constructed for the primary purpose of conducting research on biological control of insects and diseases of crop plants and for the development of plant resistance to pests that could be expected to provide results of very substantial benefit to American agriculture. Such installations would be staffed by foreign scientists in the several scientific disciplines required would permit a concentration of effort in these fields of research. Because of location in foreign countries these laboratories would have access to biological material not available in the United States. As a result, findings would supplement similar research being undertaken in the United States. Establishment of such laboratories in India, Poland and Yugoslavia would enable research on a wide variety of plant and insect materials from different environmental areas. Since these are countries in which the supply of U. S. owned foreign currency can be expected to be excess to normal U. S. needs for a number of years, the establishment of such facilities would permit the development of a continuing research program of great value to U. S. agriculture.

Any construction of buildings or provision of facilities would be provided grants or contracts with responsible institutions in foreign countries. These institutions would be required to provide the necessary managerial, clerical and maintenance personnel to operate and maintain the establishments. The United States would contribute to the support of these laboratories through research agreements on problems important to American agriculture.

The control of the use of such buildings and facilities would remain with the United States at least during the first five years of operation. This would permit the establishment of a sound research program geared and directed toward U. S. objectives. At the conclusion of this 5-year period further use would be based upon mutual determination. Any buildings or facilities provided would be the property of the cooperating institution since they necessarily would be located on property under the control of the foreign governments. Although the institution receiving the grant or contract to provide the structures or facilities would have full responsibility to get the construction accomplished, the U. S. would reserve the right to approve the basic plans.

(4) An increase of \$300,000 for office space and quarters.

Because of distance and the large number of active projects under the foreign agricultural research program in the Asian area, a regional research office to administer this program was established in New Delhi, India about five years ago. This office has jurisdiction over operations of the program in the far east. The present staff of this office consists of five United States citizens and a number of local employees. Since there was no office space available under control of the United States, it was necessary to rent office space. It has also

been necessary to provide furnished quarters for American staff because it is less costly ~~than~~ shipping household goods from the U. S. and paying housing allowances. The acquisition of suitable quarters by purchase or construction for office and staff would be cheaper in the long run than renting such quarters. Construction or purchase of office space and housing facilities would enable the regional office to acquire better space and housing nearer to it than at present. Because of the large amount of excess currencies controlled by the United States in India and Pakistan it is anticipated that this regional office will continue to operate for a number of years. However, should it develop at some future date that the operations of this regional office are to be discontinued, these quarters could be used advantageously by other U. S. personnel headquartered in New Delhi.

Note: It is estimated that the following dollar equivalents will be used for research facilities and for office space and quarters:

Research facilities:

India	3,800,000
Israel	2,500,000
Pakistan	1,000,000
Poland	3,000,000
Yugoslavia	3,000,000
	<u>13,300,000</u>

Office space and quarters:

India	300,000
Total	<u>13,600,000</u>

STATUS OF PROGRAM

In fiscal year 1958, the Department initiated a research program abroad utilizing foreign currencies from the sale of surplus agricultural commodities under Title I of Public Law 480. Originally confined to market development research authorized by section 104(a) of P.L. 480, the program was subsequently expanded to include agricultural and forestry research under section 104(k) of the law. It now involves work in the following general areas:

1. Farm research, including crops research and plant science, entomology, animal husbandry, livestock diseases and parasites, soil and water conservation and agricultural engineering.
2. Utilization research, including the development of new or improved methods of utilizing agricultural materials.
3. Marketing research, including studies of food and fiber preference of foreign consumers, improvement of quality and acceptability of U. S. agricultural products in foreign markets, and improvement in handling and storage of agricultural products.
4. Forestry research, including research on development of better forest products; the development of information on the protection of forests in the United States from fire, disease, and insects; and methods and procedures for increasing the growth of managed forests.
5. Agricultural economics research, including farm and market economics research and foreign trade analysis.
6. Human nutrition research, including food composition, experimental nutrition, human metabolism and food quality research.

Dollar-financed research in these areas is conducted by the Agricultural Research Service, the Forest Service, and the Economic Research Service in their respective areas of functional and subject-matter responsibilities. Research under this program is designed to complement and not to duplicate or displace the dollar-financed research activities of these agencies.

Within the Department, primary responsibility for administration of this program is assigned to the Agricultural Research Service. The activities are coordinated with operations in the Forest Service and Economic Research Service through a Policy and Program Development Board consisting of members of these Services and the Foreign Agricultural Service. This Board develops broad policies for operations of the program and coordinates the activities of the various Department agencies in carrying out research financed by foreign currencies. Initial arrangements for the research in foreign countries are made through the Department of State and the Agricultural Attaches of the Foreign Agricultural Service of the Department.

Prior to executing any research agreement with a foreign institution, the Department also consults with the Agricultural Attaches and Heads of Missions to insure that the proposed projects would be consonant with the foreign policy of the United States.

Great care is exercised to make certain that research projects undertaken benefit American agriculture and do not develop undesirable competition for American agricultural products abroad. Careful attention is given to the type of institution conducting research under this program to make certain it has the facilities, equipment, and personnel to carry out sound and productive research. Because of these high standards some 50% of the proposals received from foreign institutions have been rejected by the Department; final determination has not yet been made on acceptance or rejection of an additional 12%. The remaining 38% has been accepted and agreements have been executed or are awaiting execution.

Selected Examples of Recent Progress. Through June 30, 1965, a total of 630 research agreements had been obligated with foreign research institutions. In fiscal year 1965, 138 agreements were obligated. Agreements vary in total amount for the life of the project (averaging 4 to 5 years) from under \$12,000 to slightly over \$250,000. Examples of research progress under these agreements, only a few of which have yet been completed, with country and U. S. Dollar equivalent (at June 30, 1965 exchange rates) for each agreement follows:

FARM RESEARCH

1. Scrapie disease of sheep. Research on this complicated disease of sheep has demonstrated definitely that the scrapie agent can be passed through mice and back to sheep and goats. The similar nature of the lesions in all species is evidence of the identity of the disease in sheep, goats, mice and other laboratory animals. Of special interest in this phase of the research was the fact that scrapie passed through the mouse produced great severity and wide distribution of lesions in the brain of a sheep, in contrast to the lesions produced by inoculation of a similar animal with scrapie sheep material.

Attempts are being made to select genetically for a change in the incidence of induced scrapie in a population of sheep artificially challenged with the standard sheep-passed scrapie agent. Results indicate that the incubation period for the induced disease is at least bimodal in its inheritance. In some cases the incubation period, as evidenced by clinical symptoms, was 200 days after infection with scrapie sheep material and in other cases the incubation period was 650 days following infection with the same material. (United Kingdom, \$150,819)

2. Biological control of aquatic weeds. Aquatic weeds constitute a serious problem in the Southeastern and Gulf Coast States. The

plants clog drainage and irrigation canals, infest wildlife refuges, lower quality of water, interfere with boat and barge movements, and lower the recreational value of lakes, ponds and streams in this area. The control measures that have been tried in the United States have been largely unsuccessful. In a search for biological control it is indicated that a weevil, Neochetina bruchii, offers real possibilities as a biological agent for control of water hyacinth. Tests are underway to determine whether the weevil feeds on agricultural plants of economic importance. (Uruguay, \$119,028)

3. Disease resistance in oats. Oats rank fourth in total production of cereal crops in the United States. They are grown in rotations in the corn Belt with corn and clover. Oats constitute one of the principal feed grains in the United States. However, losses to this crop caused by crown rust and stem rust frequently amount to millions of dollars. Wild species of oats showing resistance to crown rust are being collected, identified, tested, and seed of the more promising kinds sent to the U. S. where they are already being used in breeding programs to incorporate this resistance into our native improved oat varieties. One such resistant variety is expected to be released to farmers in 1968. Locating sources of species resistant to stem rust has not been so successful but the search continues. (Israel, \$122,057)
4. Biological control of injurious insects. A rather large number of research projects have been initiated abroad to discover, identify and provide cultures of parasites, predators or pathogens that attack insects which are injurious to U. S. crops and forests and which were introduced into the U. S. from other parts of the world where there are the parasitic agents that tend to keep them under control.

One country alone--India--has furnished the following:

18 shipments of a predaceous bug and 43 shipments of a parasite of the woolly aphid which attacks conifers.

50 shipments, including 10 different species, of parasites of sugarcane borers.

19 shipments, including 4 species, of parasites of the European corn borer.

40 shipments, including 7 species, of parasites of the corn earworm.

All of these parasitic agents received a preliminary screening at the source and will be extensively screened by the Department before consideration is given to releasing the parasites. It is hoped that some of these parasites and predators may become established in the U. S. and that they will contribute to the control of their host pests. (India, \$178,136 - 3 projects)

5. New Crops. Chemical screening of plants for possible new sources of steroidal alkaloids revealed that the fruit of the plant Solanum khasianum var. chatterjekanum contained 5.4% of solasodine on a dry weight basis. This is the richest source of solasodine so far known.

Solasodine is used as a starting product for the manufacture of pharmaceuticals used in human medicine. Some pharmaceutical manufacturing firms are interested in this plant as a possible source of raw material for their production needs.

Seeds of this plant have been imported to the U.S. to determine whether the plant can be grown on a commercial basis. (India, \$20,752)

6. Bee Breeding. Although bee rearing has been practiced for many, many years, little attention has been given to the basic principles of bee breeding. The drone bee, whose sole purpose is to furnish semen for fertilizing queen bees, is an important factor in improved breeding of bees. In nature many of the drone larvae are eaten by the worker bees. Research has indicated that there is a critical period in the stage of development of the drone larvae when they are subject to **destruction** by worker bees; after this period the larvae are not eaten. Means have been developed for rearing drone larvae in incubators, a new technique which now offers the possibility of applying the genetic principles so successfully used in plant breeding to the improvement of bees. (Poland, \$31,180)

UTILIZATION RESEARCH

7. Role of shortening in improving bread doughs. It is common practice to add oxidative "improvers" to bread flours to improve their baking properties; such improvement is particularly helpful to sales of U.S. hard red winter wheats in European markets. Now, research has clarified a nonoxidative but related aspect of the picture, by showing how the oxidative phenomenon is aided by addition of shortening fats to flour. Time-lapse motion pictures were used to show that bread dough containing added fat rises faster in the oven and sets later. This work is helping to place the use of shortening in doughs on a **more** scientific and effective basis, in contrast to the previously unexplained situation in which it was simply known that added fat caused increased loaf volumes and more uniformly textured crumb, but not why or how. (United Kingdom, \$82,446)
8. Oat antioxidants. Fundamental studies of the keeping quality of oats have led to the chemical synthesis of a series of new, nontoxic antioxidants from readily available, naturally occurring substances that can be used in a wide range of foodstuffs.

This research was initiated to find an antioxidant for processed oats because the natural antioxidants present in uncooked products are made partially ineffective by heat. These new compounds developed are the subject of the first U.S. public service patent resulting from research with Public Law 480 funds. Many inquiries about these new compounds have already been received from food industry groups. The new antioxidants have a large potential use in the United States, where nearly a billion bushels of oats are used each year for breakfast foods and processed animal feeds.

Using chromatographic techniques, British scientists isolated a group of nine or possibly ten new antioxidants from oat oil. After determining the chemical structure of these natural compounds, they synthesized similar compounds from various combinations of naturally occurring substances to give antioxidants that are soluble either in water or in fat, as desired. Thus, the new compounds are compatible with a wide range of foodstuffs; and the fact that they can be modified to be soluble in either oil or water should improve their distribution through a variety of foodstuffs. (United Kingdom, \$61,505)

9. Principles of dyeing wool. Dyeing of wool fibers is a complicated process. The most desirable conditions would permit the dyes to penetrate through the entire wool fiber structure in a matter of a few minutes, resulting in level, uniform color. Results of research have shown how certain solvents swell the wool fiber so that the protein structure is more open, thus permitting the dye to penetrate more easily. It has also shown how the degree of electrical charge on the dye molecule affects the speed of dyeing, and accordingly the penetration of the dye into the wool. These basic chemical results give new insight into processes that take place in practical wool dyeing, and should thus be useful in improving dyeing procedures as well as in developing new ones. (United Kingdom, \$65,446)
10. Saponins in soybean meal shown to be nutritionally harmless. Fundamental studies are underway on the amount and types of saponins in soybean meal, their effect on nutritional value, and their fate during processing. Scientists have isolated and characterized a new saponin from soybeans bringing the total to five known to be present. Tests so far have shown that the amount of saponins in soybean meal is not detrimental to its nutritional value.

Saponins are a type of glycoside occurring in a wide variety of plants, and which are characterized by their foaming action in water. They are alleged to influence adversely the flavor and nutritional value of foods and feeds. Although their presence in raw soybeans had been established, heretofore, there has been no information available on possible varietal difference or on their fate during processing. A bitter taste in certain varieties of soybeans has been attributed to saponins by some investigators.

Controlled feeding tests with mice led to the conclusion that saponins in soybean meal are harmless in concentrations much higher than those found in the **processed feed meal**. The **enzyme-inhibitory** effect of the purified saponins was fully counteracted by mixing them with soybean protein. (Israel, \$98,339)

11. New sources of rennet for cheesemaking. A key step in the cheese-making process is the coagulation of milk by a clotting enzyme. Traditionally, this is accomplished by use of rennet, an extract of the stomach lining of milk-fed calves. Because of anticipated future shortages of calf rennet, and because its use is restricted by religious beliefs in many areas of the world, substitute coagulating agents are needed. Promising results have been reported from research on microbial sources of rennet. A survey of 400 microorganisms revealed five bacteria and one mold that can produce milk-coagulating enzymes of greater activity than calf rennet. Further, these enzymes were shown to be easily and cheaply produced by growth on such materials as wheat bran, peanut cake, and **dairy** byproducts. Practical cheese-making experiments are planned to demonstrate the commercial feasibility of microbial rennets; this work may lead to new domestic and export markets for cheese among consumers with special food problems and prejudices. (India, \$51,238)

MARKETING RESEARCH

12. "Canary Yellow" coloration in wool. **Wool buyers** discount off-colored wool as much as 6 to 12 percent. "Canary yellow" is considered a more serious defect than other off colors because it is **difficult** to obtain pure shades, pastel shades and bright hues with yellow colored wools. Studies show that the pigments that are the main cause of "Canary Yellow" coloration are in the suint (dried perspiration of sheep) and that they enter the wool fiber when the grease content is low. This new information on the cause of "Canary Yellow" coloration may lead to methods for preventing this serious defect. (India, \$92,536)
13. Simple test for determining safety of ethylene dibromide-fumigated feed. Free ethylene dibromide in inadequately aerated feeds affect egg production in poultry and sperm production in cattle. Investigators have developed a method of using a halogen leak detector to determine if fumigated feed has been aerated enough to be free of harmful amounts of ethylene dibromide. The method and equipment is simple and quick enough for use in the field and will be useful to commercial dealers and users of fumigated feeds. (Israel, \$138,163)

FORESTRY RESEARCH

14. Boron and manganese requirements for pine. A number of metals are essential parts of enzyme systems and are necessary for good growth of plants. Although visual deficiency symptoms often will indicate that something is wrong, these symptoms may not discriminate between essential minerals. Chemical analysis of the foliage or some other plant part is a more definite technique. To date, there has been little information on the amounts of the minor elements needed for good growth of forest trees. Scientists have determined through careful research that growth of pine trees may be decreased when the manganese concentration in the foliage falls below about 40 parts per million. For boron, another essential element, the critical level is about 25 parts per million. These findings provide foresters with a basis for determining whether deficiency of these two elements is limiting growth of trees. (Spain, \$96,030)
15. Mycorrhizae survive sterilant and fire treatments. Mycorrhizae, which are considered to be essential for good growth of most trees, are not seriously inhibited by either sterilant treatments in the nursery or by slash burning in the forest. In Finland, mycorrhizal development was delayed on pine and spruce seedlings after the nursery soil had been treated with various sterilants to control weeds and disease organisms. But by the end of the season the mycorrhizal development and seedling growth equalled, or in some treatments exceeded, that in the untreated soil. Similarly, slash burning retarded but did not prevent mycorrhizal formation. The high surface temperatures did not penetrate deeply enough to kill the fungi. These findings are important in that they remove doubts concerning the deleterious effects of these common silvicultural practices. (Finland, \$50,383)
16. Susceptibility of American conifers to European twist rust. Twist rust, a rust that alternates between twigs and needles of coniferous trees and leaves of poplars, is a deforming disease. A tree infected in youth becomes so severely deformed when it reaches maturity that over one half of its volume becomes practically worthless for lumber. A suspicion that the disease had been introduced into the North America continent led to its study in Italy where it is native. A wide range of U.S. species tested for susceptibility indicated that 12 species of our pines, 3 species of our firs, 2 species of our spruces, all of our hemlocks, one species of larch and Douglas fir were potential hosts of the disease. Not all species were equally susceptible indicating that the disease is probably less hazardous to some of our species than others. No genetic resistance of the disease has yet been found in the pines nor the poplar host species. Tests have shown, however, Thiram, an organic sulphur fungicide applied from mid-April to mid-May at weekly intervals, will produce disease-free planting stock. (Italy, \$46,095)

17. Forest tree seed disease organisms. Many fungi and bacteria occur in and on forest tree seed that are capable of reducing their viability or causing outright death. Also because seed are shipped worldwide, there is always present the danger of widely disseminating a dangerous pathogen if the right precautionary methods are not taken. Not all pathogens found in seed are potentially dangerous, but all that occur need to be tested in order to appraise the amount of damage they can cause. A study of tree seed in Poland uncovered the presence of 51 fungi on oak seed of which 16 presently appear capable of reducing germination. From birch seed, 29 fungi were isolated of which 7 appear to affect germination. From pine seed, only two species of fungi were isolated and from larch seed, only three, which indicates that pathogens are much more of a problem on the seed of hardwood species than on softwood species. Research is now being directed towards determining the extent to which the frequently found pathogens influence the viability of seed and the vigor of seedlings produced from them. (Poland, \$25,094)
18. Growth regulating substance from woody plants. Growth promoting activity by a widely occurring plant chemical has been shown in a project concerned with rooting of cuttings. The compound, para hydroxy benzoic acid, has been found in a great number of plants. A role in growth promotion has been suspected, but never clearly demonstrated. In this project the chemical was isolated, purified, and identified by rigorous chemical analysis. Known amounts of the extracted chemical and of pure p-hydroxy benzoic acid were placed on test material with a resulting increase in growth. The compound was extracted from a shrub which is easy to root from cuttings. Interestingly, the poplars, easy to root, also are known to contain this compound. If further research shows that the compound is active in stimulating rooting, this finding will be of great importance in the propagation of trees for forestry. (Spain, \$64,530)

NOTE: All dollar equivalents are at the June 30, 1965, exchange rates.

Project Proposals and Status of Agreement. From the inception of the Special Foreign Currency Program through June 30, 1965, the Department had received a total of 2,532 research proposals from interested overseas institutions. The status of these proposals is shown in the following tables:

	Number of Proposals			Approved (Proposals) Awaiting Obligation	Agreements Obligated a/		Current Agreements	
	Received	Rejected	Awaiting Modification, Negotiation, or Review		Number	Dollar Equivalent	Number	Dollar Equivalent
Farm research.....	1,150	556	152	139	253	\$15,929,886	246	\$15,758,699
Utilization research.....	804	462	51	57	231	14,903,363	178	11,143,890
Marketing research.....	143	76	14	7	44	2,315,595	37	2,133,648
Forestry research.....	282	123	30	27	70	4,409,470	68	4,374,143
Human nutrition research.	55	12	16	9	18	730,505	16	690,623
Agricultural economics research.....	95	41	30	11	13	515,427	9	399,203
Statistical reporting service.....	3	2	--	--	1	37,653	1	37,653
Totals.....	2,532	1,272	293	250	630	38,841,899	555	34,537,859

a/ Excludes five cancelled agreements for which no funds were expended. Also excludes 82 agreements and \$3,684,644 obligated under funds transferred from the "Translation of publications and scientific cooperation, Executive." Includes 75 agreements and obligations of \$4,304,040 since terminated.

Special Foreign Currency Program
Approved Research Proposals and Agreements Obligated by Country
(as of June 30, 1965)

<u>Country</u>	<u>Approved Proposals Awaiting Obligation</u>	<u>Research Agreements Obligated a/</u>	
		<u>Number</u>	<u>Dollar Equivalent</u>
<u>Europe:</u>			
Austria.....	2	--	--
Belgium.....	1	2	\$ 161,622
Finland.....	13	27	1,869,083
France.....	1	24	1,540,453
Germany, West.....	2	7	387,942
Greece.....	--	3	202,821
Italy.....	8	35	2,024,756
Netherlands.....	3	8	634,636
Poland.....	19	45	1,985,889
Spain.....	17	40	2,315,629
Sweden.....	3	8	558,441
Switzerland.....	--	2	118,775
United Kingdom.....	11	45	3,580,552
Yugoslavia.....	4	5	362,172
Subtotal, Europe.....	84	251	15,742,771
<u>Asia:</u>			
Ceylon.....	--	1	40,407
Taiwan (Republic of China).....	13	13	234,917
India.....	62	158	9,377,754
Israel.....	43	102	7,839,995
Japan.....	8	15	466,418
Korea.....	--	5	95,802
Pakistan.....	3	15	782,147
Philippines.....	--	3	48,639
Syria.....	--	1	92,171
Turkey.....	2	10	231,237
Subtotal, Asia.....	131	323	19,209,487
<u>Africa:</u>			
U.A.R. (Egypt).....	3	8	602,897
<u>Oceania:</u>			
Australia.....	2	3	178,493

<u>Country</u>	<u>Approved Proposals Awaiting Obligation</u>	<u>Research Agreements Obligated a/</u>	
		<u>Number</u>	<u>Dollar Equivalent</u>
<u>South America:</u>			
Brazil.....	29	17	\$ 1,103,952
Chile.....	--	4	153,026
Colombia.....	1	11	723,797
Peru.....	--	3	258,373
Uruguay.....	--	10	869,103
Subtotal, South America.....	<u>30</u>	<u>45</u>	<u>3,108,251</u>
TOTAL.....	<u>250</u>	<u>630</u>	<u>38,841,899</u>

a/ Excludes five cancelled agreements for which no funds were expended. Also excludes 82 agreements and \$3,684,644 obligated under funds transferred from "Translation of publications and scientific cooperation, Executive." Includes 75 agreements and obligations of \$4,304,040 since terminated.

Obligations, Expenditures and Conversions of Foreign Currencies.

Obligations: Through June 30, 1965, the Department had obligated a total of \$40,275,135 for activities under the Special Foreign Currency Program. In fiscal year 1966, it plans to obligate an additional \$10,275,780. These obligations may be summarized as follows:

<u>Obligations through F. Y. 1966</u> (dollars in thousands)			
<u>Fiscal Year</u>	<u>Market Development Research (sec. 104(a))</u>	<u>Agricultural and Forestry Research (sec. 104(k))</u>	<u>Total</u>
1958.....	\$ 371.5	--	\$ 371.5
1959.....	1,651.8	--	1,651.8
1960.....	2,230.5	--	2,230.5
1961.....	1,893.2	\$ 1,832.4	3,725.6
1962.....	2,859.0	5,294.6	8,153.6
1963.....	2,566.3	5,000.7	7,567.0
1964.....	3,214.8	4,466.4	7,681.2
1965.....	3,485.8	5,408.1	8,893.9
1966 (est.)....	2,907.3	7,368.5	10,275.8
Total.....	<u>21,180.2</u>	<u>29,370.7</u>	<u>50,550.9</u>

Additional obligations under funds transferred in 1959 from "Translations of publications and scientific cooperation, Executive Office of the President" to purchase foreign currencies for research totalled \$3,832,195 through June 30, 1965. An additional \$57,805 would be obligated in fiscal year 1966 to exhaust these funds. Obligations under this transfer are as follows:

<u>Fiscal Year</u>	<u>(Dollars in thousands)</u>
1959.....	\$ 1.7
1960.....	793.2
1961.....	1,565.2
1962.....	595.8
1963.....	248.6
1964.....	555.5
1965.....	72.2
1966 (est.)..	57.8
Total.....	<u>3,890.0</u>

Special Foreign Currency Program, 1965 Obligations
(In thousands)

Market Development Research
(Section 104(a))

Agricultural and Forestry Research
(Section 104(k))

Agri-

Human cultural

Human

Farm

Nutrition

Farm

Nutrition

Economics

Forestry Marketing

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Research

Special Foreign Currency Program, 1965 Obligations - cont'd
(in thousands)

Obligations	Market Development Research (Section 104(a))				Agricultural and Forestry Research (Section 104(k))				Total
	Utili- zation Research	Marketing Research	Farm Research	Human Nutrition Research	Farm Research	Human Nutrition Research	Economic Research	Forestry Marketing Research	
Adjustments of Prior Year Obligations									
South America: (Brazil, Chile, Columbia and Uruguay)	-89.0	-11.0	--	--	-149.6	--	--	-43.3	-292.9
Asia: (Ceylon, Korea and Turkey)	-17.5	--	--	--	-1.1	--	--	--	-18.6
Australia:	-0.4	--	--	--	--	--	--	--	-0.4
Total	<u>2,723.6</u>	<u>474.2</u>	<u>157.3</u>	<u>130.7</u>	<u>4,224.5</u>	<u>52.4</u>	<u>28.7</u>	<u>771.1</u>	<u>8,693.2</u>
Transfer to National Science Foundation for translation of scientific publications.....									200.0
GRAND TOTAL									<u>8,893.2</u>

a/ Includes increased support to project on "Marketing rice in Colombia" sponsored by Economic Research Service.

b/ Project on investigation of genetic changes in seed of Northern European forage crop varieties produced in the United States. Since demand exceeds production of these seeds in Northern Europe, it may be possible for U. S. growers to produce these seeds for export.

c/ Includes project on factors of food selection other than nutritional and palatability sponsored by the Statistical Reporting Service.

Special Foreign Currency Program, Estimated 1966 Obligations
(In thousands)

- 163 -

	Market Development Research (Section 104(a))			Agricultural and Forestry Research (Section 104(k))				Total
	Marketing Research	Utili- zation Research	Human Nutrition Research	Farm Research	Human Nutrition Research	Marketing Research	Forestry Research	
	\$	\$	\$	\$	\$	\$	\$	\$
Australia.....	--	15.2	--	--	--	--	--	15.2
Austria.....	--	198.2	--	--	--	--	--	198.2
Belgium.....	--	37.0	--	--	--	--	--	37.0
Brazil.....	--	38.9	--	--	--	--	62.5	101.4
Ceylon.....	--	--	--	305.8	--	--	--	305.8
Chile.....	--	--	--	--	--	--	12.5	12.5
China (Taiwan)...	--	12.0	--	0.6	--	--	--	12.6
Colombia.....	0.2	0.6	--	--	--	--	52.7	53.5
Finland.....	--	54.1	--	--	--	--	2.0	56.1
France.....	--	62.2	--	--	--	--	--	62.2
Greece.....	--	--	--	1.5	--	--	1.5	3.0
Guinea.....	--	--	--	0.5	--	--	0.5	1.0
India.....	5.0	594.0	--	1,060.0	2.0	42.0	167.0	2,017.0
Israel.....	77.5	394.0	--	1,923.5	81.2	80.3	293.5	2,850.0
Italy.....	20.0	121.8	--	40.0	--	--	48.9	230.7
Japan.....	100.0	289.9	0.5	--	--	--	--	390.4
Korea.....	--	--	--	10.3	--	--	--	10.3
Netherlands.....	--	114.5	--	--	--	--	--	114.5
Pakistan.....	--	--	--	189.2	--	--	57.0	246.2
Peru.....	--	--	--	3.0	--	--	23.2	26.2
Philippines.....	--	--	--	12.4	--	--	--	12.4
Poland.....	--	152.9	--	823.8	--	--	250.0	1,226.7
Spain.....	--	17.1	--	151.6	--	--	151.3	320.0
Sweden.....	--	63.4	--	--	--	--	--	63.4
Switzerland.....	--	78.0	--	--	--	--	--	78.0
Syria.....	--	--	--	152.9	--	--	--	152.9
Tunisia.....	--	--	--	1.0	--	--	--	1.0
Turkey.....	--	--	--	120.5	--	--	--	120.5

Special Foreign Currency Program, Estimated 1966 Obligations - Continued
(In thousands)

Market Development Research (Section 104(a))		Agricultural and Forestry Research (Section 104(k))					Agricultural Economics		Total
Obligations	Marketing Research	Utili- zation Research	Human Nutrition Research	Farm Research	Human Nutrition Research	Marketing Research	Forestry Research	Economics Research	
United Kingdom....\$	--	\$ 68.0	\$ --	\$ 151.5	\$ --	\$ --	\$ --	\$ --	\$ 219.5
UAR (Egypt).....	--	52.0	--	109.2	--	--	--	--	161.2
Uruguay.....	--	2.0	--	1.0	--	--	18.5	--	21.5
West Germany.....	--	56.8	--	--	--	--	--	--	56.8
Yugoslavia.....	--	--	--	393.0	--	--	--	--	393.0
Total.....	202.7	2,422.6	0.5	5,451.3	83.2	122.3	1,141.1	147.0	9,570.7
Undistributed.....									605.1 a/
Transfer to National Science Foundation for translation of scientific publications.....									100.0
GRAND TOTAL.....									10,275.8

a/ Reserved primarily to cover currency fluctuations.

Expenditures: Expenditures of foreign currencies from the inception of the program through June 30, 1965, totaled \$21,099,625. In addition, the Department plans to expend \$6,338,000 in fiscal year 1966. These expenditures may be summarized as follows:

Expenditures through F. Y. 1966
(In thousands)

<u>Fiscal Year</u>	Market Development Research (sec. 104(a))	Agricultural and Forestry Research (sec. 104(k))	<u>Total</u>
1959.....	\$ 195.1	\$ --	\$ 195.1
1960.....	654.6	--	654.6
1961.....	1,254.9	350.2	1,605.1
1962.....	1,735.8	1,351.8	3,087.6
1963.....	2,136.8	2,071.7	4,208.5
1964.....	2,292.9	2,514.9	4,807.8
1965.....	2,816.3	3,724.6	6,540.9
1966 (est.)	<u>2,270.5</u>	<u>4,067.5</u>	<u>6,338.0</u>
Total..	<u>13,356.9</u>	<u>14,080.7</u>	<u>27,437.6</u>

Additional expenditures under funds transferred in 1959 from "Translation of Publications and Scientific Cooperation, Executive Office of the President" to purchase foreign currencies for research totalled \$2,858,353 through June 30, 1965. An additional \$239,000 would be expended in fiscal year 1966. Expenditures under this transfer are as follows:

<u>Fiscal Year</u>	(Dollars in thousands)
1959.....	\$ 0.1
1960.....	75.1
1961.....	495.2
1962.....	425.6
1963.....	590.9
1964.....	655.5
1965.....	616.0
1966 (est.)	<u>239.0</u>
	<u>3,097.4</u>

Conversions: As of June 30, 1965, the Department had converted a total of \$4,833,448 of foreign currencies as follows:

<u>Fiscal Year</u>	(Dollars in thousands)
1961.....	\$ 770.0
1962.....	1,432.0
1963.....	1,910.1
1964.....	<u>721.3</u>
Total	<u>4,833.4</u>

(c) Construction of Facilities

PROJECT STATEMENT

Project	:	1965	:	1966	:	1967
	:	Actual	:	(Estimated)	:	(Estimated)
Construction of research facilities	:	97,561	:	630,045	:	- -
Unobligated balance brought forward	:	-749,439	:	-651,878	:	- -
Unobligated balance lapsing ..	:	- -	:	21,833	:	- -
Unobligated balance carried forward	:	651,878	:	- -	:	- -
Total appropriation	:	- -	:	- -	:	- -

STATUS OF PROGRAM

The obligations in 1966 provide principally for a construction contract for the facilities at Columbia, Missouri, for research on biological control of insects. Bids received on the first advertisement were too high and it was necessary to revise plans and specifications for readvertisement. The 1966 obligations also include a storage building at the tillage laboratory at Auburn, Alabama, and additional work on buildings at Fargo, North Dakota, and minor change orders on settlement of claims.

(d) Animal Disease Laboratory Facilities

PROJECT STATEMENT

Project	1965 Actual	1966 (Estimated)	1967 (Estimated)
Facilities for animal disease research and control	12,280	- -	- -
Unobligated balance brought forward	-12,280	- -	- -
Unobligated balance carried forward	- -	- -	- -
Total appropriation or estimate	- -	- -	- -

STATUS OF PROGRAM

The National Animal Disease Laboratory has been constructed on a 318-acre tract of donated land near Iowa State University, Ames, Iowa. It was occupied on May 1, 1961. In fiscal year 1965, the obligations provided for small buildings to complete the installation.

(e) Working Capital Fund, Agricultural Research Center

This Working Capital Fund is a continuing operating fund established by the 1951 Agricultural Appropriation Act with an appropriation of \$300,000 to finance the operating costs of certain centralized services and facilities at the Agricultural Research Center, Beltsville, Maryland, pending receipt of reimbursements for such costs from the agencies provided with the services. The integrity of the original appropriation is maintained from year to year by means of these reimbursements.

The Working Capital Fund provides for financing costs of farm operations; guard and custodial service; maintenance of buildings, plant facilities, roads, grounds, and equipment; operating the central heating, water treatment and sewage disposal plants; repair, alteration, and construction services; and other related activities.

Services are chiefly for the Agricultural Research Service. Other Department agencies which receive service are the Consumer and Marketing Service, Forest Service, and Soil Conservation Service. Other Federal agencies serviced include the Department of Commerce, Department of Health, Education and Welfare, Department of the Interior, Department of the Navy, and the National Aeronautics and Space Administration. Actual obligations for fiscal year 1965 amounted to \$4,558,474; estimated obligations for fiscal years 1966 and 1967 are \$4,805,000 and \$4,837,000, respectively.

The financial status of the working capital fund is as follows:

	June 30, 1965 (Actual)	June 30, 1966 (Estimated)	June 30, 1967 (Estimated)
<u>Assets:</u>			
Cash.....	\$449,174	\$449,000	\$449,000
Accounts receivable.....	537,424	538,000	538,000
Materials and supplies.....	87,423	87,000	87,000
Equipment.....	260,903	261,000	261,000
Total assets.....	<u>1,334,924</u>	<u>1,335,000</u>	<u>1,335,000</u>
<u>Liabilities (current).....</u>	<u>623,407</u>	<u>623,000</u>	<u>623,000</u>
<u>Government Equity:</u>			
Initial appropriation.....	300,000	300,000	300,000
Donated assets.....	301,625	302,000	302,000
Retained earnings.....	109,892	110,000	110,000
Total Government equity.....	<u>711,517</u>	<u>712,000</u>	<u>712,000</u>

PASSENGER MOTOR VEHICLES

The 1967 Department Estimates propose the purchase of 4 additional passenger motor vehicles, all station wagons, and the replacement of 250 vehicles. Present cars are being fully utilized and there are no surplus cars to meet the additional need.

Additional Vehicles

The 4 additional passenger motor vehicles will be used at the following locations:

Morgantown, West Virginia

One station wagon is needed for research involving assessment of soil physical and chemical characteristics and of climatic conditions of precipitation, topography, and length of growing seasons for important soil climatic areas within the region. Control practices will be developed and tested on field plots along with supporting laboratory studies. Soil chemical characteristics will be studied to determine the fertility requirements, and tillage practices will be developed that will encourage greater intake and retention of soil water and increase the rooting depths of plants on the steep slopes common to the area. The station wagon will provide for transportation of staff personnel to various locations in search of appropriate research sites and frequent travel to locations where research is underway over a wide area, and will also serve as a dual purpose vehicle in that small items of scientific equipment and hand tools can be transported in a closed vehicle to research sites as well as to transport personnel. In addition, it will provide transportation to State, National, and Regional work planning conferences and meetings, State and local conferences with collaborators and other Department personnel, and for transportation of visiting research personnel to the research sites.

Weslaco, Texas

One station wagon is needed in connection with the proposed increase for staffing the new Fruit and Vegetable Products Laboratory which is expected to be completed by September 1966. At that time, the staff will be increased by an additional number of professional scientists currently estimated at seven to eleven. This staff increase will approximately double the present professional staff and step up research transportation demands proportionately. The

research entails travel to plots several miles distant from the laboratory to inspect crops at periodic intervals during the growing and harvesting season. Also, because the Fruit and Vegetable Products Laboratory works on a diversity of products, many of which mature at corresponding times, it is often necessary for personnel to conduct cooperative work, or collect samples, simultaneously in opposite areas in the Rio Grande Valley.

College Station, Texas

A station wagon will be required at this location for the new Cotton Disease Laboratory, for which architectural contracts have been awarded. This vehicle will be used extensively for local travel on campus and experiment station lands which cover a large area and to nearby areas to attend meetings, conferences, field trips, etc., incident to the research program. It will be used for continual transportation between the offices and laboratories and the field work which is 5 miles away. Also, longer trips will be made to outlying substations in the State and to the town, approximately 5 miles distant, for supplies, etc. From time to time up to six passengers will travel together. This addition is needed to provide transportation for four new professional employees and related technicians and laborers. Three of these scientists are now on the job and active recruitment is in progress for the fourth.

Stoneville, Mississippi

One station wagon is needed at this location. In 1964, three professional research employees with their technical assistants were employed at Stoneville. As a result of funds provided in 1964, two additional professional employees with related technical assistants were employed there. These scientists do not now have any passenger transportation available and need a station wagon for transportation at the Station, between the Station and local town and surrounding experimental areas and for trips outside the local area in connection with cooperative programs, conferences, and meetings. There are frequent occasions when six or more persons will ride in the vehicle at the same time. The principal area of research is basic and applied research in the principles and practices of weed control in the southern United States.

Replacements

It is estimated that all of the 250 passenger vehicles to be replaced will either have mileage of more than 60,000, or be 6 or more years old. A detailed justification of the proposed replacements follows:

Research: Replacements would be made of 73 of the 449 passenger motor vehicles operated at field stations engaged in research. These vehicles are used in travel where no public transportation is available, such as to farms, ranches, cooperating experiment stations, etc., and in travel to remote sections of large stations. They are essential for collecting experimental data and materials necessary for facilitating research work.

Plant and Animal Disease and Pest Control: Replacement would be made of 177 of the 672 passenger motor vehicles of which approximately 96 percent are operated in daily farm-to-farm travel in the control and eradication of tuberculosis, brucellosis, screwworms, sheep scabies, cattle tick fever, hog cholera, and various plant pest control programs. About 4 percent are operated in travel on animal and plant quarantine work. They are frequently operated over rough and rugged roads in all kinds of weather. In order to keep them in safe and dependable operating condition, maintenance costs are frequently high. However, the control and eradication activities, testing and inspection cannot be carried on without them. In most cases, employees who own cars are reluctant to use them for even limited periods because of the hard usage to which they are subjected in this work. The replacements recommended will make it possible for those cars to be replaced which would be uneconomical to continue in operation because of their age, mileage, or both.

Age and Mileage Data

Age and mileage data for passenger carrying vehicles on hand as of June 30, 1965:

Age-Year Model	Age Data		Mileage Data		
	Number of Vehicles	Percent of Total	Lifetime Mileage (thousands)	Number of Vehicles	Percent of Total
1957 or older	14	1	Over 100	6	1
1958	20	2	80-100	24	2
1959	22	2	60-80	134	11
1960	63	6	40-60	228	20
1961	90	7	20-40	343	30
1962	172	15	Under 20	410	36
1963	222	20			
1964	276	24			
1965	266	23			
Total	1,145*	100		1,145*	100

*Excludes 11 vehicles used in foreign countries, 1 ambulance, and 6 buses.

AIRCRAFT

Replacements

Authority is requested to replace two airplanes in order to upgrade equipment and decrease operating costs. Also they should be replaced for safety. These planes are used by technicians in investigating and demonstrating the use of special equipment for suppression of destructive insects attacking crops. Planes rapidly become obsolete and uneconomical to repair and are subject to many mishaps. Replacement will not be made, however, if it is found practical and economically feasible to retain the present equipment.

COOPERATIVE STATE RESEARCH SERVICE

Purpose Statement

The Cooperative State Research Service was established by Secretary's Memorandum No. 1462 dated July 19, 1961 and Supplement 1, dated August 30, 1961 under Reorganization Plan No. 2 of 1953. The primary function of the Service is to administer acts of Congress that authorize Federal appropriations for agricultural research carried on by the State agricultural experiment stations of the 50 States and Puerto Rico.

Acts under which payments to States may be made include:

1. Agricultural Experiment Stations Act of August 11, 1955 (Hatch Act of 1887, as amended - 7 U.S.C. 361a-361i)
2. Section 204(b) of the Agricultural Marketing Act of 1946 (7 U.S.C. 1623)
3. Cooperative Forestry Research Act of October 10, 1962 (16 U.S.C. 582-582a-7)
4. Act of September 6, 1958, authorizing grants for support of scientific research (42 U.S.C. 1891-1893)
5. Research Facilities Act of July 22, 1963, (7 U.S.C. 390-390k)
6. Section 2 of the Act of August 4, 1965 (7 U.S.C. 450b)
7. Appalachian Regional Development Act of 1965.

Administration of payments and grants involves the review and approval in advance of each individual research proposal submitted by a State agricultural experiment station or other State institution to be financed in whole or in part from Federal-grant funds, the disbursement of the funds, and the continuous review and evaluation of research programs and expenditures thereunder. The Service also encourages and assists in the establishment and maintenance of cooperation within and between the States, and participates in the planning and coordination of research programs between the States and the U.S. Department of Agriculture.



Available Funds and Man-Years
1965 and Estimated, 1966 and 1967

Item	Actual 1965		Estimated Available 1966		Budget Estimate 1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Cooperative State Research Service:						
Payments and expenses:						
Appropriations	\$50,296,580	96	\$54,827,000	103	\$47,740,000	90
Transfer from Section 32	400,000	- -	400,000	- -	- -	- -
Total	50,696,580	96	55,227,000	103	47,740,000	90
Obligations under other USDA appropriations:						
Miscellaneous reimbursements	4,400	- -	10,000	- -	10,000	- -
Total, Agricultural Appropriation Bill	50,700,980	96	55,237,000	103	47,750,000	90
Other funds:						
Agency for International Development-Training of foreign participants	7,600	1	8,300	1	8,300	1
Miscellaneous reimbursements	1,955	- -	- -	- -	- -	- -
Total, Other Funds	9,560	1	8,300	1	8,300	1
Total, Cooperative State Research Service	50,710,540	97	55,245,300	104	47,758,300	91

Revision of Project Titles and Structure
in 1967 Budget Estimates

<u>Activities in the</u> <u>1966 Budget</u>	<u>Proposed Structure</u> <u>in 1967 Budget</u>
1. Payments to agricultural experiment stations: (a) Agricultural research under the Hatch Act. (b) Marketing research under the Agricultural Marketing Act.	1. Payments to agricultural experiment stations under the Hatch Act.
2. Grants for cooperative forestry research.	2. Same
3. Grants for basic scientific research.	3. Contracts and grants for scientific research.
4. Grants for facilities.	4. Same
5. Federal administration.	5. Penalty mail.
6. Penalty mail.	6. Federal administration.

Explanation of Proposed Changes

It is proposed to eliminate item 1(b) as no funds have been appropriated since 1964 for use under the authority contained in the Agricultural Marketing Act.

It is proposed to change the title of project 3 to insert the word "contracts" and to delete the word "basic". Under existing authority, funds proposed in 1967 will be available for contracts and grants for research, both applied and basic. Funds were provided in 1965 by a supplemental appropriation for contracts and grants for research applicable to the Appalachian program. These changes are made to reflect the availability of funds for these purposes.

The order of projects 5 and 6 has been revised to place them in the same order as they are listed in the appropriation bill.

Payments and Expenses

Appropriation Act, 1966	\$54,795,000
Transferred from "Removal of surplus agricultural commodities" (annual appropriation act)	400,000
Proposed supplemental, 1966, for increased pay costs	32,000
Base for 1967	55,227,000
Budget Estimate, 1967	47,740,000
Decrease	<u>-7,487,000</u>

SUMMARY OF INCREASES AND DECREASES

	1966 Available	Increase or Decrease		1967 Estimate
		Pay Costs	Other	
Payments to the agricultural experiment stations	\$46,893,221	- -	-\$8,245,000	\$38,648,221
Contracts and grants for scientific research	2,000,000	- -	+2,910,000	4,910,000
Grants for facilities	2,000,000	- -	-2,000,000	- -
Federal administration	1,523,779	\$13,000	-165,000	1,371,779
All other	2,810,000	- -	- -	2,810,000
Total	<u>55,227,000</u>	<u>+13,000</u>	<u>-7,500,000</u>	<u>47,740,000</u>

PROJECT STATEMENT

Project	1965	1966 (estimated)	Increases and Decreases		1967 (estimated)
			Increased	Other	
			Pay Costs (P.L. 89-301)		
1. Payments to agricultural experiment stations under the Hatch Act	\$43,941,514	\$46,893,221	- -	-\$8,245,000(1)	\$38,648,221
2. Grants for cooperative forestry research	1,000,000	2,500,000	- -	- -	2,500,000
3. Contracts and grants for scientific research a/	700,000	2,000,000	- -	+2,910,000(2)	4,910,000
4. Grants for facilities	3,242,000	2,000,000	- -	-2,000,000(3)	- -
5. Penalty mail ..	310,000	310,000	- -	- -	310,000
6. Federal administration:					
(a) Set-aside of funds under payments to agricultural experiment stations.	1,129,779	1,219,779	- -	-255,000	964,779
(b) Cooperative State Research appropriation .	287,614	304,000	+\$13,000	+90,000	407,000
Subtotal	1,417,393	1,523,779	+13,000	-165,000(4)	1,371,779

(continued on next page)

Project	1965	1966 (estimated)	Increases and Decreases		1967 (estimated)
			Increased (P.L. 89-301)	Other	
Unobligated balance	85,673	- -	- -	- -	- -
Total increased pay costs (P.L. 89-301)	(- -)	(32,000)	(+13,000)	(- -)	(45,000)
Total available or estimate	50,696,580	55,227,000	+13,000(5)	-7,500,000	47,740,000

a/ The 1965 and 1966 amounts for this item include \$400,000 transferred from the appropriation item "Removal of Surplus Agricultural Commodities (Section 32)". 1967 estimates include no transfer from Section 32.

The 1965 amount also includes the supplemental appropriation of \$300,000 made in 1965 for the Appalachian program. Of this amount, \$99,000 was obligated in 1965 and \$201,000 in 1966.

INCREASES AND DECREASES

(1) A decrease of \$8,245,000 for payments to experiment stations under the Hatch Act. The proposed decrease would be accomplished by the States, in consultation with the Cooperative State Research Service, to eliminate low-priority research in the experiment stations financed with Hatch Act grants.

Areas which will be considered in making this reduction are as follows:

- Eliminate all projects on new or expanded uses of chlorinated hydrocarbons for any pest control purpose and all screening work on commercial pesticides. Shift funds to research on new and other means of pest control.
- Eliminate all "varietal" plant testing research projects not essential to important research objectives.
- Eliminate all fertilizer trials and all test demonstration research.
- Review all animal feeding comparison research. Shift research to quantitative and physiological nutrition studies.
- Eliminate all routine population genetic studies. Shift research to molecular biology, cytogenetic and mendelian genetic studies.
- Place major research emphasis on the five top agricultural commodities of a State or commodities in which a State is one of the top ten producers.
- Eliminate descriptive and historical research marketing studies. Shift research to such areas as marketing structure, efficiency, competition, supply and management studies.

This decrease would be partially offset by the \$2,910,000 increase for contracts and grants for scientific research justified below.

(2) An increase of \$2,910,000 for contracts and grants for scientific research.

Contracts and grants for research will be made with non-profit institutions whose primary purpose is the conduct of scientific research and the \$2,910,000 increase will be used (a) to strengthen research in specific areas of special interest (\$1,940,000), and (b) to improve bio-agricultural research competence (\$970,000) in those land-grant colleges not included under the Hatch Act.

Under (a) the \$1,940,000 increase, together with the \$2,000,000 in base funds, would be utilized as follows:

- a. Development of human resources -- to provide tactical information to rural individuals and families in decisions that will contribute to human development and improve utilization of material resources \$125,000
- b. Development and conservation of water resources -- to obtain greater efficiency in the use of water in agriculture and to improve water quality, including studies of irrigation systems, water collection or impoundment, evapo-transpiration by plants, water control structures, effects of land use patterns on water yield, the physics of soil moisture and water movement in soils and meteorological relationships between precipitation and interception losses, infiltration, and runoff \$600,000
- c. Air and water pollution \$300,000
- d. Salmonellosis -- to determine the infection process in livestock, poultry and eggs and to develop means of control \$175,000
- e. Toxin-producing molds -- to determine presence and mode of development of toxins in cotton-seed meal, forages, soybeans and other commodities \$200,000
- f. Reducing costs of production of soybeans -- to research the genetics, physiology and plant nutrition of this crop to lower the cost of production of soybeans through improvement of the per acre yield \$400,000
- g. Efficient production of plant proteins -- to develop protein concentrates from cereal grains, oilseed meals, legumes and leaf meal to supplement protein deficient diets \$150,000
- h. New uses for agricultural and forest products -- to initiate a new basic program in utilization research on the chemical and physical composition and **properties** of agricultural and forest products, including development of new and improved industrial products from tallow by chemical modification \$290,000
- i. Utilization of plant proteins -- to maximize the desired effects of heat treatment and to improve processing technology, concentration of protein, removal of fiber or inactivation of inhibiting substances \$300,000

- j. Marketing cooperatives -- to study problems of effective cooperative size, geographic coverage, commodity or commodities handled, quality control of products, assurance of adequate quantity for delivery, adjustments to supply and demand under conditions of surplus and vertical versus horizontal organization \$250,000
- k. Human nutrition -- basic research on the interrelationships of the at least 80 required nutrients as well as on enzymes and hormones \$150,000
- l. Reducing cost of cotton production -- to provide cotton growers with less expensive systems of culture and harvest, to acquire plants with resistance to pests and exploring new approaches to control, to obtain varieties that will grow more efficiently and reach maturity in a shorter growing period, and to develop or perfect new harvesting systems \$1,000,000

Total funds proposed Fiscal Year 1967 3,940,000

The \$970,000 increase under (b) above would be used to initiate a program of grants to the 17 institutions established under the Second Morrill Act of 1890 which are not eligible to receive funds under the Hatch Act of 1887. These colleges are predominantly non-white institutions in the South. The grants will be used to develop their research capabilities to help realize their full potential contribution to agriculture and rural life.

These 17 educational institutions provide a base for expanding our nation's research capabilities and talents. At present they have limited funds on which to establish this potential. The staffs have a background and association with rural problems. The exposure of graduate students to staff members conducting research will aid greatly to their education and training. The Cooperative State Research Service will work closely with these institutions and provide advice in planning and coordinating their programs of research.

(3) A decrease of \$2,000,000 for grants for facilities at the State agricultural experiment stations is requested. The general budgetary situation makes it necessary to eliminate this program in 1967.

Funds provided for this purpose in prior years have aided the stations in establishing or renovating laboratory facilities and in improving their activities on pesticide and other research.

(4) A decrease of \$165,000 for Federal administration. This decrease is necessitated by the net reduction in the Cooperative State Research Service's program -- primarily due to the \$8,245,000 decrease justified above. It is anticipated that the Service's staff can provide an adequate level of leadership and program expertise to the experiment stations within the level of funds proposed for this activity in fiscal 1967.

(5) An increase of \$13,000 is to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

This appropriation provides the Federal Government's contribution to the agricultural experiment stations in the various States and in Puerto Rico, established pursuant to the provisions of the Hatch Act of 1887.

The State agricultural experiment stations conduct research and experiments along lines authorized by the Hatch Act, as amended, on the problems constantly encountered in the development of a permanent and sustaining agriculture and in improvement of the economic and social welfare of rural families. Because of differences in climate, soil, market outlets, and other local conditions, each State has distinct problems in the production and marketing of crops and livestock. The farmers in the individual States naturally look to their State agricultural experiment stations for solution of the State and local problems and, in recent years, have requested increased services to help meet changing conditions.

Research programs at the State stations, to be most effective, include participation in regional and national programs. Joint attack by a group of State stations is the most effective and often the only practical approach to problems of common interest. The stations, to an ever increasing extent, are acting together as regional groups to provide cooperative coordinated attacks on problems of regional and national interest. In a similar manner, the research programs of the State agricultural experiment stations and the Department of Agriculture are supplementary and interdependent.

The Federal-grant funds constitute a powerful force in bringing about inter-State cooperation and Federal-State collaboration in the planning and conduct of this overall program of agricultural research. Therefore, the impact of the Federal-grant funds cannot be fully evaluated solely on the basis of the amount of funds provided.

Research at State stations during the fiscal year 1965 included approximately 6,600 specific research projects financed wholly or in part by Federal-grant funds and about 7,500 projects under non-Federal funds. These projects are continued as long as they are productive. Approximately 14% of the research program passes its point of maximum productiveness annually and is replaced by new research on pressing problems.

Distribution of Payments:

1. The Agricultural Experiment Stations Act of August 11, 1955 (Hatch Act, as amended) provides that the distribution of Federal payments to States for fiscal year 1955 shall become a fixed base and that any sums appropriated in excess of the 1955 level shall be distributed in the following manner:

- 20% shall be allotted equally to each State.
- not less than 52% shall be allotted to the States as follows:
 - One-half in an amount proportionate to the relative rural population of each State to the total rural population of

all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

-not more than 25% shall be allotted to the States for cooperative research in which two or more State agricultural experiment stations are cooperating to solve problems of the agriculture of more than one State.

-3% shall be available to the Secretary of Agriculture for the administration of this Act.

The amended act also provides that any amount in excess of \$90,000 available for allotment to any State, exclusive of the regional research fund, shall be matched by the State out of its own funds for research, and for the establishment and maintenance of facilities necessary for the prosecution of such research. It also retains the requirement for marketing research as it existed in fiscal year 1955 and provides that 20% of the funds appropriated in excess of the 1955 appropriations shall be used for conducting marketing research projects approved by the Department of Agriculture.

2. The Cooperative Forestry Research Act of October 10, 1962 provides that the apportionment among States shall be determined by the Secretary after consultation with a national advisory board of not less than seven officials of the forestry schools of the State-certified eligible colleges and universities chosen by a majority of such schools. In making such apportionments consideration shall be given to pertinent factors including, but not limited to, areas of non-Federal commercial forest land and volume of timber cut annually from growing stock. The act also limits the payments to the amount made available and budgeted from non-Federal sources by the certified institution for expenditure for forestry research.
3. The Act of September 6, 1958 (42 U.S.C. 1891-1893) provides for competitive grants to non-profit research institutions. Transfer funds in the amount of \$400,000 were made available in fiscal year 1965 for grants to State agricultural experiment stations. Two projects to 2 States were funded.

Funds were also made available in 1965, by supplemental appropriation, for contracts and grants in Appalachia. Of these funds, \$99,000 were obligated late in fiscal 1965 and the remaining \$201,000 will be obligated in fiscal 1966.

4. The Research Facilities Act of July 22, 1963 provides that funds be allocated as follows:

-one-third equally to each State.

-two-thirds allotted to the States as follows:

one-half in an amount proportionate to the relative rural population of each State to the total rural population of all States, and one-half in an amount proportionate to the relative farm population of each State to the total farm population of all States.

The act also limits the payments to the amount made available by such State from non-Federal funds for the same purpose.

Penalty Mail

The Hatch Act of 1887, as amended (7 U.S.C. 361f), provides for the mailing under penalty indicia by agricultural experiment stations of bulletins, reports, periodicals, reprints of articles, and other publications, including lists of publications necessary for the dissemination of results of research. Mailings include not only those to individual farmers upon request but also to newspapers, libraries, other experiment stations, and organizations interested in results of research and dissemination of such results.

Under the terms of Public Law 705, approved July 14, 1956, the Department paid to the Post Office Department \$310,000 to cover postage on third and fourth class mail sent under the penalty privilege by the State agricultural experiment stations during fiscal year 1965. This payment covered the procurement of approximately 3 million envelopes, wrappers, labels, and tags by the experiment stations in the 50 States and Puerto Rico. Approximately the same volume of mail is anticipated in fiscal years 1966 and 1967.

Table 1 shows the distribution of Federal payments to State agricultural experiment stations and other State institutions and non-Federal funds for research at State agricultural experiment stations for the fiscal year 1965. Table 2 shows the appropriations for State agricultural experiment stations and other eligible institutions for the fiscal years 1965 and 1966. Table 3 indicates the estimated distribution of 1966 Federal funds by research program areas.

Table 1

Distribution of Federal Payments to States and Non-Federal Funds for Research at State Agricultural
Experiment Stations and Other State Institutions - Fiscal Year 1965

State	Hatch Act			Cooperative:			Contracts:			Total			Non-Federal:			Grand Total
	Formula	Regional		Total	Forestry	Research	Research	and	Other	Federal		Funds				
	Funds	Research	Fund				Facilities	Scientific	Funds	Available						
Alabama	\$970,690	\$216,734		\$1,187,424	\$26,161	\$80,587			-	\$1,294,172	\$3,042,326	\$4,336,498				
Alaska	262,724	24,275		287,029	15,158	24,096			-	326,283	333,580	659,863				
Arizona	345,136	185,150		530,286	16,877	31,416			-	578,579	2,732,472	3,311,051				
Arkansas	809,638	151,913		961,551	24,786	66,316			-	1,052,653	2,923,775	3,976,428				
California	948,726	363,912		1,312,638	24,442	83,436		\$200,000	-	1,625,516	19,216,977	20,842,493				
Colorado	429,958	247,395		677,353	17,221	39,834			-	734,408	1,983,961	2,718,369				
Connecticut	369,501	119,199		488,700	16,533	33,783			-	539,016	1,724,303	2,263,319				
Delaware	280,565	90,831		371,396	13,095	25,707			-	410,192	588,857	999,055				
Florida	563,557	165,187		728,744	25,130	54,382			-	808,256	7,275,215	8,083,471				
Georgia	1,018,335	246,726		1,265,061	26,849	86,546			-	1,378,456	4,073,316	5,451,772				
Hawaii	309,539	94,512		404,051	13,439	24,926			-	442,416	1,880,733	2,323,149				
Idaho	387,980	152,746		540,726	22,035	38,111			-	600,872	1,511,173	2,112,045				
Illinois	1,009,716	251,605		1,261,321	18,253	101,835			-	1,381,403	5,182,608	6,564,017				
Indiana	890,642	212,206		1,102,848	18,597	92,277			-	1,213,722	3,840,642	5,054,364				
Iowa	901,568	285,171		1,186,739	17,221	96,780			-	1,300,740	4,169,021	5,469,761				
Kansas	636,761	185,194		821,955	14,470	62,131			-	898,556	3,535,988	4,434,544				
Kentucky	1,034,582	186,848		1,221,430	19,628	95,698			-	1,336,756	2,744,710	4,081,466				
Louisiana	720,945	133,418		854,363	25,130	62,257			-	941,750	4,389,878	5,331,628				
Maine	387,137	120,351		507,488	24,442	34,065			-	565,995	655,751	1,221,746				
Maryland	484,001	150,279		634,280	16,190	46,089			-	696,559	1,623,528	2,320,087				
Massachusetts	443,638	154,751		598,389	17,565	40,403			-	656,357	1,226,001	1,882,358				
Michigan	960,409	176,024		1,136,433	24,442	95,368			-	1,256,243	4,201,801	5,458,044				
Minnesota	866,961	203,095		1,070,056	23,411	91,033			-	1,184,500	5,134,966	6,319,466				
Mississippi	1,003,067	183,853		1,186,920	24,442	88,926			-	1,300,288	2,671,341	3,971,629				
Missouri	933,415	186,289		1,119,704	21,347	90,449			-	1,231,500	3,109,803	4,341,303				
Montana	373,765	164,971		538,736	21,347	35,777			-	595,860	1,817,689	2,413,549				
Nebraska	571,003	211,300		782,303	14,126	57,242			-	852,671	3,553,012	4,406,683				
Nevada	260,029	94,061		354,090	12,751	23,610			-	390,451	536,771	927,222				
New Hampshire	309,417	94,820		404,237	17,565	27,542			-	449,344	344,268	793,612				
New Jersey	421,808	225,529		647,337	16,533	38,607			-	712,477	3,260,745	3,973,222				
New Mexico	363,395	98,395		461,790	16,190	31,951			-	509,911	829,474	1,339,405				

State	Hatch Act			Cooperative:			Contracts:			Total		
	Formula Funds	Regional Research	Fund	Total	Forestry Research	Research Facilities	and Grants for:	Scientific:	Other Funds	Federal Funds Available	Non-Federal Funds	Grand Total
New York	\$972,100	\$399,453		\$1,371,553	\$23,067	\$93,692	-	-	-	\$1,468,712	\$9,406,839	\$10,895,151
North Carolina	1,403,465	302,746		1,706,211	26,849	136,365	99,000	-	-	1,968,425	3,991,468	5,959,893
North Dakota	453,802	149,780		603,582	11,719	44,718	-	-	-	660,019	1,956,158	2,616,177
Ohio	1,136,636	202,654		1,339,290	19,628	111,081	-	-	-	1,469,999	3,360,575	4,830,574
Oklahoma	690,034	180,051		870,085	17,909	57,718	-	-	-	945,712	2,575,503	3,521,215
Oregon	487,527	251,594		739,121	25,130	44,747	-	-	-	808,998	4,911,505	5,720,503
Pennsylvania	1,220,113	277,377		1,497,490	24,098	111,055	-	-	-	1,632,643	2,672,791	4,305,434
Puerto Rico	991,599	174,102		1,165,701	12,751	106,150	-	-	-	1,284,602	2,673,116	3,957,718
Rhode Island	269,642	99,996		369,638	12,751	23,768	-	-	-	406,157	320,887	727,044
South Carolina	815,822	148,699		964,521	23,754	75,219	-	-	-	1,063,494	1,710,448	2,773,942
South Dakota	451,724	155,050		606,774	13,095	44,887	-	-	-	664,756	1,790,956	2,455,712
Tennessee	1,052,037	190,318		1,242,355	21,347	98,996	-	-	-	1,362,698	2,012,688	3,375,386
Texas	1,373,548	285,210		1,658,758	22,379	120,645	-	-	-	1,801,782	4,644,799	6,446,581
Utah	325,720	179,646		505,366	15,158	28,852	-	-	-	549,376	1,120,968	1,670,344
Vermont	325,791	70,376		396,167	17,221	29,584	-	-	-	442,972	384,218	827,190
Virginia	924,225	167,955		1,092,180	24,442	85,758	-	-	-	1,202,380	2,847,672	4,050,052
Washington	549,813	299,314		849,127	25,130	51,354	-	-	-	925,611	4,599,802	5,525,413
West Virginia	667,387	120,300		787,687	19,972	52,813	-	-	-	860,472	735,115	1,595,587
Wisconsin	854,359	224,787		1,079,146	23,754	91,173	200,000	-	-	1,394,073	5,453,262	6,847,335
Wyoming	295,429	138,723		434,152	14,470	27,245	-	-	-	475,867	1,015,313	1,491,180
Total	34,539,411	9,394,871		43,934,282	1,000,000	3,242,000	499,000	-	-	48,675,282	158,298,768	206,974,050
Committee of Nine Travel	-	7,232		7,232	-	-	-	-	-	7,232	-	7,232
Unobligated balance	29,497	12,210		41,707	-	-	201,000	-	-	242,707	-	242,707
Subtotal	34,568,908	9,414,313		43,983,221	1,000,000	3,242,000	700,000	-	-	48,925,221	158,298,768	207,223,989
Federal Administration from Hatch Funds												
CSRS Appropriation					-	-	-	-	-	1,129,779	-	1,129,779
Unobligated balance									287,614	287,614	-	287,614
Subtotal	34,568,908	9,414,313		43,983,221	-	-	-	-	43,966	43,966	-	43,966
Penalty Mail									331,580	1,461,359	-	1,461,359
Grand Total	34,568,908	9,414,313		43,983,221	1,000,000	3,242,000	700,000	-	310,000	50,696,580	158,298,768	208,995,348

Table 2
Appropriations for Cooperative State Research Service
Fiscal Years 1965-1966
(In dollars)

State	1965 Actual	1966 Estimate
<u>Current Authorization:</u>		
1. <u>Payments to agricultural experiment</u>		
<u>stations under the Hatch Act:</u>		
a. <u>Distributed by formula:</u>		
Alabama	970,690	1,025,326
Alaska	262,754	276,616
Arizona	345,136	364,282
Arkansas	809,638	853,973
California	948,726	1,009,027
Colorado	429,958	455,215
Connecticut	369,501	390,904
Delaware	280,565	295,589
Florida	563,557	599,279
Georgia	1,018,335	1,077,269
Hawaii	309,539	324,000
Idaho	387,980	411,958
Illinois	1,009,716	1,079,688
Indiana	890,642	953,716
Iowa	901,568	967,892
Kansas	636,761	678,074
Kentucky	1,034,582	1,100,125
Louisiana	720,945	762,350
Maine	387,137	408,194
Maryland	484,001	513,737
Massachusetts	443,638	469,269
Michigan	960,409	1,025,714
Minnesota	866,961	929,137
Mississippi	1,003,067	1,063,722
Missouri	933,415	995,168
Montana	373,765	396,068
Nebraska	571,003	608,790
Nevada	260,029	273,539
New Hampshire	309,417	325,766
New Jersey	431,808	456,144
New Mexico	363,395	382,927
New York	972,100	1,038,717
North Carolina	1,403,465	1,498,361
North Dakota	453,802	482,548
Ohio	1,136,636	1,213,282
Oklahoma	690,034	728,164
Oregon	487,527	516,295
Pennsylvania	1,220,113	1,296,741
Puerto Rico	991,599	1,064,686

(Continued on next page)

State	1965 Actual	1966 Estimate
Rhode Island	269,642	283,266
South Carolina	815,822	866,583
South Dakota	451,724	480,591
Tennessee	1,052,037	1,119,959
Texas	1,373,548	1,457,098
Utah	325,720	343,013
Vermont	325,791	343,615
Virginia	924,225	982,594
Washington	549,813	583,349
West Virginia	667,387	701,976
Wisconsin	854,359	943,050
Wyoming	295,429	311,562
Subtotal	34,539,411	36,728,908
b. Regional Research Fund a/	9,394,871	10,154,313
Committee of Nine Travel	7,232	10,000
Total agricultural research under the Hatch Act	43,941,514	46,893,221
c. For administration	1,129,779	1,219,779
Subtotal	45,071,293	48,113,000
2. <u>Grants for cooperative forestry research b/</u>	1,000,000	2,500,000
3. <u>Contracts and grants for scientific research c/</u>	700,000	2,000,000
4. <u>Grants for facilities</u>	3,242,000	2,000,000
5. <u>Penalty Mail</u>	310,000	310,000
6. <u>Federal administration:</u>		
Included in item 1	(1,129,779)	(1,219,779)
CSRS appropriation	287,614	304,000
Subtotal	(1,417,816)	(1,523,779)
Unobligated balance	85,673	- -
Total Available or Estimate	50,696,580	55,227,000

- a/ Allotted to States on the basis of recommendations by a committee of experiment station directors and approved by the Cooperative State Research Service.
- b/ Apportioned among the States on a basis determined by the Secretary after consultation with a national advisory board of not less than seven officials of forestry schools chosen by eligible institutions.
- c/ \$400,000 from Section 32 funds included in 1965 and 1966. \$300,000 for Appalachia included in 1965.

Table 3

Estimated Distribution by Research Program Areas
of Federal Payments to State Agricultural Experiment Stations and
Other Eligible Institutions
Fiscal Year 1966

(In thousands of dollars)

1. Resource Development and Conservation	7,182
2. Protection of Biological Resources	14,207
3. Efficient Production	18,705
4. Marketing	5,057
5. Utilization	4,447
6. Consumer Use	<u>1,795</u>
Subtotal	51,393
Facilities	2,000
Penalty Mail	310
Federal Administration	<u>1,524</u>
Total Funds Available	55,227

Selected Examples of Recent Progress: Recent accomplishments under this appropriation are cited below:

A. Payments to States and Puerto Rico under the Hatch Act

1. Resource Development and Conservation

- a. Commercial Production of Catfish in Farm Ponds.--The possibilities of commercial production of catfish in farm ponds were investigated by the Alabama Agricultural Experiment Station. Tests with over 15 species indicated that the channel catfish and the white catfish were the most promising. Both were quite efficient in food conversion. Production tests indicated that 2,400 pounds of these fish per acre could be produced in ponds in a 10 month period. Under the conditions of these production tests, the channel catfish also proved to be an excellent sport fish.
- b. Highway Beauty and Safety.--Highway safety engineers say that roadside plantings of trees and shrubs, besides making our highways much more attractive, actually are a safety factor.

The Arizona Agricultural Experiment Station cooperating with the State Highway Department has underway a planting program testing various trees and shrubs for their survival under the rigorous conditions of highway edges and the median strip of the federal interstate system.

Also under study are grass plantings for highway shoulders, to avert erosion and also for beautification.

- c. The Movement of Labor Between Farm and Non-Farm Jobs.--Researchers at the Michigan Agricultural Experiment Station in a study based on Social Security records, have shown that the net reduction in the farm labor force during the period 1955-1959 averaged 3.5 percent for each year. During the period studied, average annual reductions in the farm labor force resulted from (1) retirements - 4.8 percent, (2) off-farm movers - 14.2 percent. Additions to the farm labor force occurred as follows: (1) new entrants - 3.0 percent and (2) in-farm movers - 12.5 percent. They found that 84.7 percent of all farm-non-farm moves were by persons who moved once or twice. The average number of movers out of agriculture was higher in the younger age groups and in the lower income classes. The majority were farm laborers and multiple job holders. Findings confirmed the hypothesis that persons who left farming and realized gains in income from the change stayed in non-farm employment. Those who experienced lower incomes returned to farming. More non-farm employment opportunities and better training and skills among those preparing to leave the farm are clearly indicated needs.
- d. Development of Scales to Measure Deviation from Norms and Social and Personal Disorganization.--Researchers at the North Carolina Agricultural Experiment Station cooperating on a Southern Regional Project (S-44) have succeeded in developing a means (scales) to measure deviation

from norms in people and social and personal disorganization, particularly among those in poverty. The scales have shown that more than half of those at the poverty level are afflicted to varying degrees by attitudes of frustration, hopelessness, helplessness and a resignation to a poverty state of life.

In view of the importance attached in the fight on poverty on reaching, communicating with, and developing effective programs for helping this population group, these scales can be useful in providing meaningful information for many types of programming efforts. The information developed by these scales becomes very important in guidance and counseling programs for the mature adults as well as youth.

- e. Need for New Channels and Methods of Communication with Low-Income Farmers.--Researchers at the Washington Agricultural Experiment Station have found that farmers of relatively low socio-economic status have distinctive patterns of social participation. Findings show that such farmers have relatively little contact with the Agricultural Extension Service. They also have a record of low participation in formal voluntary organizations, and in public affairs in their respective communities. These farmers also have a lower level of informal contacts with other families. The data suggest that those who are poor tend to be withdrawn and reticent in their social relationships.

Considering the importance of communicating with these people the findings point up the need for developing new channels and methods of communication if it is desired to communicate information, influence values, or otherwise improve the lot of the disadvantaged farmers in the Pacific Northwest.

2. Protection of Biological Resources

- a. Biological Control of Aquatic Weeds.--The Alabama Agricultural Experiment Station is developing a means of biological control of noxious aquatic vegetation through the use of various fish. Species of fish from Israel, Egypt and Java were found effective in control of *Pithophora* and other types of filamentous algae. A Congo species was effective in control of soft-leaved under-water weeds, filamentous algae and duck-weed. A Chinese grass carp controlled these species and also eliminated water hyacinths and alligator weed. Such biological control measures appear quite promising and may help to reduce the use of herbicides.
- b. Removal of Herbicide Residues from Waterways.--The Alabama Agricultural Experiment Station has demonstrated that certain herbicide residues can be quickly and efficiently removed from water. When montmorillonite was added to bodies of water previously treated with herbicides to kill noxious weeds, the concentration of the herbicide in the water was drastically reduced in 24 hours. The herbicide residues are absorbed on this soft clay-like material. This practice will be useful should water in treated ponds or streams be used for irrigation or for human consumption.

- c. Biological Control of Puncture Vine.---Scientists at the California Agricultural Experiment Station have successfully introduced two species of weevils from India to control the noxious puncture vine, an important weed in the Western United States. The puncture vine has sharp heavy spines and burrs which cause unending nuisance, injure children, and damage fruit and vegetable pickers and tires.

The weevils exhibit much promise of reducing the aggressiveness of this noxious plant, both by greatly reducing the seed supply and in destroying the growing plants.

- d. A Vaccine for the Control of Vibriosis in Cattle.---The first successful vaccine to control vibriosis in cattle has been developed by research workers at the Colorado Agricultural Experiment Station and is now available for use against this disease. Vibriosis has often been termed the greatest single cause of cattle infertility in the United States. Research at other Experiment Stations has contributed materially in reducing the problem in dairy herds where artificial insemination and other procedures can be applied to control the disease. These procedures, however, have not been practical for beef cattle herds and in these animals vibriosis has been a continuing major cause of sterility and reduced calf crops. The new vibriosis vaccine offers a practical and effective means for increasing beef cattle production efficiency by the protection it provides against these disease losses.

- e. Southern Experiment Stations Pesticide Research Laboratory.---In November 1963, the Southern Agricultural Experiment Station Directors Association approved an allocation to the Florida Station at Gainesville, Florida, for the construction of a Southern Regional Pesticide Laboratory. \$212,000 of Regional Research Funds, which normally would have been used by the individual States, was utilized for this purpose. The laboratory was dedicated on June 10, 1965, and is now in operation. The primary functions of this regional laboratory are: (1) to analyze research samples that cannot be handled locally, (2) to undertake basic programs on methodology to aid State stations in analytical problems, and (3) to conduct studies on the fate of pesticides applied to plants.

- f. Mosquitoes in Relation to Agricultural Production and Veterinary Science.---Interest in eastern encephalomyelitis, a virus disease of horses, prompted the New Jersey Agricultural Experiment Stations to initiate an intensive study of the mosquito vectors of the disease.

Preliminary results indicate that at least 90 different types of animals serve as blood hosts to the mosquitoes. Definite feeding patterns were established for a number of mosquito species. Aedes sollicitans, Mansonia perturbans and Anopheles quadrimaculatus were dominantly mammalian feeders. Deer was the most fed upon mammal. Culex pipiens and Culiseta melanura were primary avian feeders. Culex salinarius feeds indiscriminatingly on both mammals and birds. Culex territans derived most of its blood meals from cold blooded animals.

- g. Anaplasmosis Control Now Possible With New Vaccine.---Research workers

at the Oklahoma Agricultural Experiment Station have achieved a breakthrough in the search for an effective vaccine against anaplasmosis of cattle. This disease is an important cause of losses in much of the beef cattle producing areas of the United States. Practical methods for prevention and treatment of anaplasmosis until now have been of limited value.

State station and USDA researchers have developed tests capable of identifying carriers of the disease, but these carriers must be segregated from healthy cattle to prevent disease outbreaks. The new vaccine provides effective protection against anaplasmosis and should prove of particular value in areas having a high incidence of disease carriers.

3. Efficient Production of Quality Products

- a. A New Plant Hormone.--A new type of plant hormone has been identified by the California Agricultural Experiment Station that may help grow larger fruits and make cotton farming more economical. Called abscission II, the new hormone was extracted from cotton. It speeds up the shedding of leaves and fruit of several varieties of plants. It is the first such natural defoliant to be chemically identified.

Plumper apples, peaches and cherries may be possible when farmers can use the abscission hormone to thin out their orchard trees to give the remaining fruit more room to grow. Future cotton production might be made considerably more efficient by spraying the plants to reduce premature cotton boll drops. Harvesting might be simplified by using abscission II to defoliate leafy plants.

- b. More Efficient Egg Production.--Scientists at the Connecticut Agricultural Experiment Station have developed a new technique that can be easily applied on the farm for controlling rate of growth and delaying sexual maturity in poultry. Chicks that mature too early produce smaller eggs during the early part of the laying year. Feeding a diet deficient in lysine, an essential amino acid, from one day of age to 12 weeks of age results in fewer small eggs being laid when the pullets come into production. Total egg production for the laying year is about identical to pullets started with normal diets. Besides larger eggs at the start of the laying year, the pullets were produced at a lower feed cost.

- c. The Economics of Materials Handling Systems on Northeast Dairy Farms.--As dairy farms become larger the work involved in handling materials such as silage, hay, feed, and manure, has increased in proportion to the numbers of cows milked. Stations in the Northeast are cooperating to examine the costs and income effects of alternative materials handling systems on dairy farms. The Delaware Agricultural Experiment Station is examining labor and capital requirements and costs for alternative systems of storing and handling the concentrates, hay, and silage. The results are indicating the most profitable systems as well as the combination of systems for storing and handling the three basic feed ingredients used in milk production. These results will provide farmers with information for planning farm organization and for

profitably integrating these new materials handling techniques into their dairy operations.

- d. A New Growth Regulator to Improve Quality and Rate of Maturity for Lima Beans and Tomatoes.--A growth regulating compound has been successfully used at the Delaware Agricultural Experiment Station to control plant size, concentrate fruit set and increase the marketable yield of lima beans and tomatoes.

Lima bean plants were kept more compact, fruit set increased and the plants had very few unfilled pods. Tomatoes sprayed with the growth regulator were also more compact, had firmer fruit with almost no seeds and a darker red color.

Late season treatments have resulted in a more uniform rate of maturity with both lima beans and tomatoes, a condition essential to mechanical harvesting.

- e. Instrument for Determining the Lean Meat of Living Farm Animals.--Research underway in the mid-west will provide a method for establishing indices of quality in living meat animals. The method will be useful both for classifying animals used in breeding programs and for determining quality when animals are sold for slaughter.

A 50-ton vault with steel walls five inches thick is now being used at the Illinois Agricultural Experiment Station to determine lean meat on farm animals. The vault houses a sensitive instrument measuring radioactive potassium emitted by an animal. From these readings, scientists are able to estimate the amount of lean meat on living beef cattle.

The greatest advantage of this instrument is that a measurement can be made in 4 to 8 minutes, thereby eliminating the costly and tedious task of dissecting out all the lean meat. Also, the animal is still available for further experimentation. The instrument is costly and extreme care must be taken to avoid contamination with any interfering substances and "background interference".

- f. How Milk is Made.--Dairy scientists at the Illinois Agricultural Experiment Station have developed a method of growing mammary tissue outside the cow. Although it has been possible to keep these secretory cells from the udder functioning for only brief periods, these scientists hope eventually to answer the question, "How is milk made?"; that is, what nutrients, hormones, enzymes, etc., are required, and in what amounts for the most efficient production of milk. We already know each secretory cell in the udder is a complete factory unto itself manufacturing milk per se from the precursors it obtains from the bloodstream. This important "first" in research will contribute greatly to our knowledge on how these cells function and eventually to more efficient milk production.
- g. Improving Fertility of Bull Semen.--Scientists at Michigan Agricultural Experiment Station have discovered that bull spermatozoa are encased in a glycoprotein, an overcoat so-to-speak, that must be removed before the

spermatozoon is able to penetrate the wall of the female's egg, the ovum. This process has frequently been spoken of as "capacitation" in the erroneous belief that something was added to the sperm as they traversed the female reproductive tract. Since the Michigan workers were able to initiate maturation of the ovum outside the cow's body by first sub-jecting the spermatozoa to amylase, a starch splitting enzyme, they are convinced that this starchy coating sometimes inhibits fertilization. Based on this information it may now be possible to improve the fertility of certain bulls by first digesting off part or all of this glycoprotein coat covering the spermatozoa before the semen is used for artificial insemination.

- h. Carbon Dioxide Improves Roses.--Researchers at the Pennsylvania Agricultural Experiment Station have found that higher than normal carbon dioxide levels will increase the production and quality of greenhouse roses. They reported that 26 percent more flowers of much better quality were produced from rose plants receiving additional carbon dioxide compared with roses grown in a conventionally ventilated greenhouse.
- i. Improperly Functioning Milking Machines Contributed to Incidence of Mastitis.--Milking machines are essential for efficient economical milk production and yet they can be responsible for an increase in mastitis in dairy herds in spite of greatly improved sanitary measures currently in use. Vermont Agricultural Experiment Station dairy husbandmen have found that small rubber valves used in most milker pipelines lose their resiliency and leak air, thereby reducing the vacuum in the pipeline, causing the machine to milk improperly and too slowly. When the old rubber valves were replaced by new ones, the vacuum increased, the cows milked out more rapidly and the number of cases of mastitis decreased.

The Extension dairymen in Vermont are attempting to visit every dairy-man in the State and show him how this simple adjustment to his milking machine when carried out regularly will not only improve the quality of his milk but also the quantity.

4. Marketing

- a. Grain Marketing in the Southern Region.--State Agricultural Experiment Stations in the South, cooperating on Regional Project SM-29, have found that significant differences exist between actual and optimal levels of total procurement costs by firms in the Southern Region. Using 1959 and 1960 data, actual costs for procuring corn exceeded least costs sources by more than \$22,000,000 each year. An additional \$22,000,000 in savings could have been realized in procurement of soybeans and \$3,000,000 for oats if firms had used the computed least-cost sources rather than sources and modes of transportation utilized. Transportation rates, services, and relative prices undergo changes that cause shifts in the source and destination of grains and in the type of facilities needed for handling grains. Since grain marketing and processing facilities require extensive capital investments and can be used for few other purposes, correct decisions relative to type and location will result in substantial savings.

- b. Effective Apple Marketing.--The Connecticut (Storrs) and New York Agricultural Experiment Stations conducted marketing research designed to increase returns to growers, lower marketing costs, and improve customer satisfaction. The Connecticut Station in an analysis of the New England-New York McIntosh apple industry has shown that over the years McIntosh growers could substantially increase returns by a program of orderly marketing throughout the season in which sales would be adjusted to demand. Optimum monthly allocation of marketings during the period 1947-61 would have increased the total revenue by \$23,100,000.

The Cornell Station experimented with a method of harvesting apples into consumer containers and moving them directly to the retail stores. By this process a minimum of ten individual handling operations are eliminated. Many advantages were gained -- faster distribution, lower costs, greater store volume, better satisfied customers.

- c. Poultry and Egg Marketing.--The Mississippi Agricultural Experiment Station has just completed studies and published results on equilibrium prices and flows of poultry and eggs in the United States. These studies were developed along almost identical procedural lines for eggs in the period 1958-60 and 1970, and for broilers in the period 1961-63 and 1970. The main feature of the results is the development of conditions of inter- and intra- equilibrium shipments and resultant prices for each area, usually comprising a State, but in some instances more than one State. Also, the analysis shows the surplus or deficit situation existing in each area in each time period, the volume of product so involved, and the least cost service or destination of movements needed to maintain the equilibrium situation.
- d. Pricing Milk on the Basis of Its Component Parts.--Traditionally, price differentials paid for milk have been determined by butterfat content. Protein, lactose, and minerals or collectively the nonfat solids of milk also provide the bases for value and could be used in a pricing plan. The Virginia Agricultural Experiment Station is examining alternative pricing plans that include proteins and nonfat solids as components. This would give a more equitable price to producers and provide an incentive for modifying the composition of milk through breeding and selection. It might then be possible to shift the composition of milk, thus reducing the supply of components in excess and increasing the supply of components in greater demand and value. This would bring about a better adjustment within the dairy industry.

5. Utilization (Product Development)

- a. A new Safflower Variety.--New developments in the Arizona Agricultural Experiment Station's safflower breeding program may add stability to the new crop. A new safflower strain, being increased now for release to farmers, has a thin hull and nearly eight percent higher oil content than Gila. Seed from this new variety will be of higher value than Gila seed, not only because of a greater oil yield, but also because the meal after the oil is removed will have a higher protein content.

- b. High Protein Corn.--The Indiana Agricultural Experiment Station has discovered a mutant gene called opaque-2 which produces corn with radical changes in protein composition and the pattern of amino acids. The corn has 69 percent more of the protein, lysine, than normal corn. This is significant, in that transfer of the mutant gene into commercial strains will result in a more efficient production of corn on the basis of nutritive value.
- c. Acetone-Sugars Polymerize Easily.--Research chemists at the Indiana Agricultural Experiment Station in working with acetone derivatives of D-glucose and some other mono-saccharides have made water soluble polymers from low cost corn glucose. The methods seem generally applicable and there is no need for high vacuum equipment or special conditions to remove the acetone reagent that is eliminated. These substances may be regarded as low molecular weight gums. Potential uses include foods, pharmaceuticals, mucilages, pastes, textile sizing and textile printing and dyeing.
- d. A New Preserving Technique for Pork Sausage.--The New Jersey Agricultural Experiment Station has discovered that a specially coated salt will extend the freshness of sausage beyond its previous limits. When salted pork sausage is frozen it becomes rancid in about three weeks. When treated with a salt, sodium chloride coated with hydrogenated fat, and frozen, the sausage is no different than before in appearance, has a genuine sausage taste after cooking and remains free of rancidity for much longer periods of time. For sausage makers, this discovery means that they will be able to make larger batches of sausage, particularly important during seasonal peak of pork production and ship them greater distances.
- e. Drying Coffee with Solar Heated Air.--The Puerto Rico Agricultural Experiment Station has demonstrated that by harnessing solar heat energy, substantial savings in electricity or fuel costs can be achieved in drying coffee. In some cases heating costs have been reduced by 70%. This is achieved by the construction of a solar heat collector on the roof of a processing building. Circulated air, heated is used in the drying process. This development will be of great value to coffee growers throughout the world since coffee is usually grown in areas where large quantities of solar energy are normally available.

6. Human Nutrition and Consumer Use

- a. Fiber and Fabric Control of Sound in the Home.--The Georgia Agricultural Experiment Station in cooperation with USDA engineers is studying the use to which fabrics and furnishings can be used in the home to control noise. Instrumentation needed for a study of noise levels in homes was developed. The times of day at which noise levels were highest in each of 20 homes were determined, and were analyzed in terms of the use of household equipment and family activities. Such information is useful in improving living arrangements. Both window fabrics and carpet materials are being evaluated for their contribution to acoustical improvement.

b. Family Food Buying Habits.---A Southern Regional group of research workers (SM-13) has recently summarized their efforts focused on the relative magnitude, nature and scope of consumer responses to food, educational and promotional programs. Their findings suggest that:

- (1) Food choices of low socio-economic families are more habitual, nutritionally less adequate and more difficult to change.
- (2) Income and family composition appear to be more closely identified with purchase behavior than other family characteristics studied.
- (3) Efforts to bring about change in food choices differ among younger, middle age and older consumers.
- (4) Homemakers in the upper socio-economic category appear to be more aware of the health value of foods than those in the low category.

B. Cooperative Forestry Research

1. Boards from Bark.---Can the forest industries in the Pacific Northwest learn how to make major new products out of the millions of tons of Douglas-fir bark which are now wasted? Workers at the Forest Products Laboratory at Oregon Agricultural Experiment Station think one way to answer this question is to see if they can make hardboard from bark. In the first trials they reduced some of the bark to particles by hammermilling and some to larger pieces by a flaking process. The particles and flakes were then mixed, heated and pressed into a board without use of adhesive. Using the bark board as a core between panels of wood veneer or of kraft paper resulted in a material of fair strength. Commercial success in pioneering of this kind would greatly increase the efficiency of operations using Douglas fir, a thick-barked tree species.
2. Luring Douglas-fir Beetles Away From Trees in High-Value Stands.---The tiny Douglas-fir beetle kills giant Douglas-fir trees by eating its way around the tree in the inner bark. At the Oregon Agricultural Experiment Station, forest entomologists have discovered a volatile extract of inner bark fed upon by un-mated young female beetles that attracts the Douglas-fir beetles to the tree. They can experimentally generate this volatile substance into the air in a Douglas-fir forest to attract successive flights of beetles to be trapped in the generator. This research opens ways to check this beetle from building up to epidemic forest destruction.
3. Strong Floor Joists From Low Grade Wood.---Why wouldn't a lower grade wood--of which there is always plenty available--meet the same building code strength standards as a residence floor joist? "No reason why not," is the answer that came out of tests on Douglas-fir floor joists at the Oregon Agricultural Experiment Station. In one test, a floor supporting the weight of 36 visiting building inspectors, and constructed with the UTILITY grade 2 x 10-inch joists, actually deflected 38 percent less than the standard CONSTRUCTION grade 2 x 8 inch joists. The recognition of UTILITY grade Douglas fir through grade stamping and naming in building codes should gain wider use of this acceptable and abundant structural lumber by the building trades.

4. Western Tree Hybrid may have Promise for Dry-Side Planting.---After nine years of growth, hybrid trees produced by experimental crossing of Douglas fir with its southern California cousin, the Big-cone Douglas fir continue promising. The hybrid trees are much taller than comparable Douglas-fir trees of local parentage. Foresters, who produced the hybrid, at the Oregon Agricultural Experiment Station hope that the deep-root system that the hybrid inherits from its southern California parent, will adapt it for planting on dry problem areas of the Oregon Coast.
5. Improved Instrument Provides Valuable Information on Movement of Forest Soil Water.---A much improved device, called a tension-plate lysimeter, for collecting and measuring movement of water and dissolved materials through soils was developed recently by a forest soil scientist at the University of Washington School of Forestry. The lysimeter is a circular porous disk which can be inserted at any desired soil depth with minimum disturbance to the structure of the soil above. Dissolved minerals or other substances present in the water collected in the disk can be drained off through a tube for analysis. Some water characteristics can be automatically recorded.

This new equipment is finding valuable use in testing whether pesticides used in the forest eventually contaminate the underlying ground water, which is used for drinking.

6. Fertilizer Shows Potential for Boosting Long-Term Increases in Wood Growth.---Adding nitrogen to the soil has greatly increased the production of wood in a poor-site Douglas-fir forest. Researchers at the University of Washington School of Forestry found that after seven years trees benefiting from a single application of 500 pounds of nitrogen fertilizer per acre had increased in volume 230 percent. Unfertilized trees increased only 93 percent.

In another experiment, nitrogen fertilizer was applied to portions of a 30-year-old poor-site Douglas-fir stand which had just been thinned. This time 50 pounds per acre were added each year. Fertilization again resulted in larger trees. The unfertilized areas had thinner tree crowns and much brushy vegetation developed under the trees.

C. Basic Research

1. Unique Flowering Behavior of Alaskan Grasses.---Cool season perennial grasses that grow in the Northern States initiate flower development in early spring. Scientists at the Alaska Agricultural Experiment Station have discovered that grasses native to Alaska accomplish flower initiation and partial development in the fall. The Alaskan plants appear to have different temperature and day length requirements for the flowering process.

This discovery may have practical significance. If the early flowering characteristic can be incorporated in improved varieties, it would insure early maturity of seed crops. Secondly, hybridization between Alaskan grasses and cultivated species might result in the selection of varieties which would flower in one climatic region but not in another.

D. Facilities

1. Considerable progress has been made in implementing the program of pesticide facility grants. All of the stations have indicated their intentions of utilizing these funds. Typical of the studies being initiated in the new or renovated structures are those of California that will include investigations on persistence and degradation of pesticides in plants, mechanisms of herbicidal action and influence of environmental pollutants on animal physiology and crop production; Kentucky - the development of tobacco plants resistant to fungal and bacterial diseases and the insect pest, the green peach aphid; and North Dakota - seed and foliar fungicide evaluation on potatoes and the effect of pesticides on the respiration of potatoes.

EXTENSION SERVICE

Purpose Statement

Cooperative agricultural extension work was established by the Smith-Lever Act of May 8, 1914, as amended. The legislation authorizes the Department of Agriculture to give, through the Land-Grant Colleges, instruction and practical demonstrations in agriculture and home economics and related subjects and to encourage the application of such information by means of demonstrations, publications, and otherwise to persons not attending or resident in the colleges. Extension educational work is also authorized under the Agricultural Marketing Act of 1946.

The basic job of the Cooperative Extension Service is to help people identify and solve their farm, home, and community problems through use of research findings of the Department of Agriculture and the State Land-Grant Colleges, and programs administered by the Department of Agriculture.

State and county extension work is financed from Federal, State, county and local sources. These funds are used within the States for the employment of county agents, home demonstration agents, 4-H Club agents, State specialists and others who conduct the joint educational programs adapted to local problems and conditions.

The Federal Extension Service, as a partner in the cooperative effort, has three major functions:

1. Serves as liaison between the Department of Agriculture and the States, provides program leadership and assistance to the States in the conduct of Extension work, administers Federal laws authorizing Extension work and coordinates the work among the States.
2. Provides leadership in and coordination of the educational phases of all programs under the jurisdiction of the Department.
3. Provides educational assistance to areas having a substantial number of disadvantaged farms and farm families.

Available Funds and Man-Years
1965 and Estimated, 1966 and 1967

Item	Actual		Estimated		Budget Estimate	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Cooperative Extension Work,						
Payments and Expenses ..	\$85,857,000	220	\$89,135,000	237	\$90,224,000	236
Obligations under other						
USDA appropriations:						
Expenses, Agricultural						
Stabilization and						
Conservation Service						
--for assistance to						
ASCS Committees in						
Alaska	1,346	- -	645	- -	645	- -
Total, Agricultural Approp-						
riation Bill	85,858,346	220	89,135,645	237	90,224,645	236
Other Funds:						
Economic Development						
Administration, Depart-						
ment of Commerce--						
Operations	79,985	6	27,668	2	- -	- -
Office of Civil Defense,						
Department of Defense,						
rural shelter education:						
and training	1,286,047	10	1,403,560	10	1,404,700	10
Agency for International						
Development:						
Training of foreign						
participants	121,857	11	136,757	13	137,556	12
Technical consulta-						
tion	28,691	2	31,209	2	31,577	2
Special projects ...	40,377	3	32,338	2	6,467	*
Total, Agency for						
International						
Development	190,925	16	200,304	17	175,600	15
Bureau of Indian Affairs,						
Department of the Inte-						
rior--Extension work						
with the Indians ...	47,030	3	48,191	3	48,600	3

(Continued on next page)

Item	Actual		Estimated		Budget Estimate	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Office of Economic Oppor-						
tunity, Executive Of-						
fice of the President	22,763:	1	21,120:	1	21,800:	1
Cooperative work with						
land-grant colleges on						
inservice training ac-						
tivities through summer						
session courses for						
extension workers	2,327:	- -	2,300:	- -	2,300:	- -
Miscellaneous reimburse-						
ments	31,439:	- -	35,827:	- -	28,900:	- -
Total, Other Funds .	1,660,516:	36	1,738,970:	33	1,681,900:	29
Total, Extension Service .	87,518,862:	256	90,874,615:	270	91,906,545:	265

* 0.5 or less.

Cooperative Extension Work, Payments and Expenses

	Payments to States and <u>Puerto Rico</u>	Retirement and Employees' Compensation Costs for Extension Agents	Penalty Mail	Federal Extension Service	Total
Appropriation Act, 1966	\$75,600,000	\$7,857,000	\$3,113,000	\$2,565,000	\$89,135,000
Proposed transfer, 1966 for increased pay costs, within Extension Service	-64,000	- -	- -	+64,000	- -
Base for 1967	75,536,000	7,857,000	3,113,000	2,629,000	89,135,000
Adjustment to in- clude in base the foregoing transfer in 1966 for pay costs a/	+64,000	- -	- -	- -	+64,000
Adjusted base for 1967	75,600,000	7,857,000	3,113,000	2,629,000	89,199,000
Budget Estimate, 1967	75,917,500	8,139,500	3,113,000	3,054,000	90,224,000
Increase	+317,500	+282,500	- -	+425,000	+1,025,000

a/ The 1967 base has been adjusted to reflect the total appropriation for Payments to States and Puerto Rico in 1966, including \$64,000 which could not be used in 1966. This amount is proposed for transfer to the Federal Extension Service for increased pay costs. These funds could not be matched by Puerto Rico. This adjustment is necessary in order to assure that the amount each State receives will not be reduced under the amount to which it was entitled in 1966 under the formula prescribed in the basic law.

SUMMARY OF INCREASES AND DECREASES

	1966 Available	Increase or Decrease		1967 Estimate
		Pay Costs	Other	
<u>Payments to States</u> <u>and Puerto Rico:</u>				
To continue work in the Appalachian Region	a/	--	+\$717,500	\$717,500
Other payments	\$73,613,600	--	--	73,613,600

(Continued on next page)

	<u>1966 Available</u>	<u>Increase or Decrease</u>		<u>1967 Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
Retirement and Employees' Com- pensation costs for extension agents	7,857,000	- -	+282,500	8,139,500
Federal Extension Service	3,045,400	+25,000	- -	3,070,400
All other	<u>4,683,000</u>	- -	- -	<u>4,683,000</u>
Total	89,199,000	+25,000	+1,000,000	90,224,000

a/ Does not reflect \$717,500 appropriated late in fiscal 1965 to remain available through 1966.

PROJECT STATEMENT

Project	1965	1966 (estimated)	Increases and Decreases		1967 (estimated)
			Increased Pay Costs (P.L. 89-301)	Other	
1. <u>Payments to</u>					
<u>States and Puerto</u>					
<u>Rico:</u>					
a. For coopera-					
tive agricul-					
tural exten-					
sion work under:					
under the					
Smith-Lever					
Act a/	\$70,390,463	\$73,613,600	- -	+\$717,500(1)	\$74,331,100
b. For coopera-					
tive marketing					
extension work					
under the Agri-					
cultural Mar-					
keting Act ...	1,569,731	1,570,000	- -	- -	1,570,000
2. <u>Retirement and</u>					
<u>Employees' Com-</u>					
<u>pensation Fund</u>					
<u>costs for exten-</u>					
<u>sion agents b/ .</u>	7,445,005	7,857,000	- -	+282,500(2)	8,139,500
3. <u>Penalty mail</u>					
<u>(for extension</u>					
<u>agents and State</u>					
<u>extension direc-</u>					
<u>tors)</u>	3,113,000	3,113,000	- -	- -	3,113,000
4. <u>Federal Exten-</u>					
<u>sion Service:</u>					
a. Set-aside of					
funds under					
Payments to					
States and					
Puerto Rico ..	404,087	416,400	- -	-400,000(3)	16,400
b. Federal Ex-					
tension Ser-					
vice appropria-					
tion	2,550,294	2,629,000	+25,000	+400,000(3)	3,054,000
Subtotal ...	2,954,381	3,045,400	+25,000	- -	3,070,400
Unobligated					
balance	384,420	- -	- -	- -	- -
Total increased					
pay costs (P.L.					
89-301)	(- -)	(65,630)	(+30,870)	(- -)	(96,500)
Subtotal	85,857,000	89,199,000	+25,000(4)	+1,000,000	90,224,000
Proposed transfer					
for increased pay					
costs	- -	-64,000			
Total available or					
estimate	85,857,000	89,135,000			

- a/ The 1965 amount includes the supplemental appropriation of \$717,500 made in 1965 for the Appalachian program. Of this amount, \$669,000 was obligated in 1965 and \$48,500 in 1966.
- b/ The 1965 amount includes the supplemental appropriation of \$32,500 made in 1965 for the Appalachian program. All of this amount was obligated in 1966.

(1) A net increase of \$717,500 for payments to States as follows:

(a) An increase of \$717,500 for payments to States in Appalachia.

These funds would be provided under Section 3(d) of the Smith-Lever Act to continue at the present level the intensive extension program of economic and social development in the Appalachian area initiated in fiscal year 1965.

(b) A shift of \$9,600,000 in Payments to States from the formula provisions of Section 3(c) to the non-formula provisions of Section 3(d) of the Smith-Lever Act.

It is proposed to transfer \$9.6 million of Smith-Lever funds from the formula provisions of the Act to allocation on the basis of specific projects. The transfer will enable the Extension Service (1) to rapidly initiate changes in program emphases which have been in the planning stage for some time and are being effected; (2) to undertake an Extension program in the Virgin Islands replacing a program previously financed by the Agricultural Research Service and (3) to initiate an Extension program in Guam.

The funds would be allocated in furtherance of specific project proposals submitted by the State to initiate and expand work with low-income families and resource development. Since the transfer reduces the formula allocation by an equal amount, it will be necessary for the States to make program and personnel adjustments in their current program and staffing arrangements. It is proposed that \$6.7 million be redirected for resource development work and \$2.9 million for work with low-income families of which \$110,000 is for the purpose of continuation of the Extension work in the Virgin Islands and \$40,000 for Extension work in Guam. Matching from non-federal funds will not be required.

The programs in the Virgin Islands and Guam will be carried out through the Florida and Hawaii Extension Services. The purpose of programs in the Virgin Islands and Guam is to help these U.S. possessions develop types of agriculture best suited to local conditions, to achieve satisfactory prices to farmers, and to work with rural families and youth to better fit them for careers available in their localities.

(2) An increase of \$282,500 for retirement and employees' compensation costs for extension agents consisting of:

(a) An increase of \$280,216 for Federal contribution to the retirement fund for cooperative extension agents pursuant to Public Law 854.

Cooperative extension agents are joint employees of the United States Department of Agriculture and the cooperating land-grant institutions. They hold appointments under Civil Service Commission Regulation A-6, III (a) (1). Such appointments place them under the provisions of the Civil Service Re-

tirement Act, with employee contributions and benefits based on total salary received from the cooperating partners. The employer's contribution to the Federal retirement fund is provided by Federal appropriation to the Federal Extension Service.

It is estimated that 70 percent of the \$717,500 Federal increase in payments to States requested for 1967 and about 59 percent of the anticipated increase in State and county contributions of approximately \$6,500,000 will be used for salaries of personnel subject to the Retirement Act. Applying the 6.5 percent employer's retirement contribution to the combined increase results in the additional Federal contribution requirement of \$280,216.

(b) An increase of \$2,284 for Employees' Compensation Fund costs for cooperative extension agents pursuant to Public Law 86-767.

Cooperative Extension agents are covered by compensation benefits under this Act. This increase of \$2,284 together with the currently available funds for this purpose will total \$53,858, the amount required to reimburse the Bureau of Employment Compensation for the benefits paid to extension employees from the Employees' Compensation Fund for fiscal year 1965. Payments to the Fund are mandatory under existing law.

(3) A transfer of \$400,000 in Federal Extension Service from Section 3(c) to the non-formula provisions of Section 3(d) of the Smith-Lever Act. The \$9.6 million shift from formula to non-formula funds, proposed under item 1(b) above, involves a companion transfer of \$400,000 in the funds for Federal administration and coordination. This transfer does not result in an increase in funds for Federal administration or in the purposes for which these funds may be used.

(4) An increase of \$25,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P. L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

PAYMENTS TO STATES AND PUERTO RICO

Federal funds available for fiscal year 1966 under the appropriation "Payments to States and Puerto Rico" for cooperative agricultural extension work under the Smith-Lever Act and the Agricultural Marketing Act total \$75,600,000. Funds available for fiscal year 1967 are estimated at \$75,917,500.

Payments to the States and Puerto Rico are made directly to designated officers and the funds are disbursed by them in accordance with budgets and programs of work submitted by the State directors of extension and approved by the Administrator of the Federal Extension Service on behalf of the Secretary of Agriculture. As reflected in Table III, about 37% of the cost of extension work at

present is being financed from Federal sources and about 63% from State and local sources. The funds are used by the States for the employment of extension workers to carry on cooperative agricultural extension work. Paid extension workers are assisted by volunteer leaders who cooperate in carrying out extension programs.

The use of these funds is indicated in greater detail in the following tables. Table I reflects estimated allotments to the States and Puerto Rico. Table II shows the basis on which the allotments will be made and the extent to which they must be matched by State and local sources. Table III indicates the sources of funds allotted for cooperative extension work in the States and Puerto Rico for 1966, including allotments under the Agricultural Marketing Act. Table IV indicates the various classes of field agents employed with extension funds.

TABLE I
APPROPRIATIONS FOR PAYMENTS TO STATES AND PUERTO RICO
STATE ALLOTMENTS, FY 1966 - FY 1967

	Fiscal Year 1966	Increase or Decrease Fiscal Year 1967	Total Proposed for Fiscal Year 1967
Smith-Lever Act Sec. 3(b) and 3(c)2			
Alabama	\$ 2,401,592	\$ - 248,700	\$ 2,152,892
Alaska	147,370	- 48,000	99,370
Arizona	377,089	- 74,000	303,089
Arkansas	1,946,539	- 198,000	1,748,539
California	1,869,194	- 276,600	1,592,594
Colorado	657,854	- 104,100	553,754
Connecticut	415,099	- 82,400	332,699
Delaware	211,422	- 53,700	157,722
Florida	912,693	- 155,600	757,093
Georgia	2,525,995	- 269,900	2,256,095
Hawaii	335,521	- 50,900	284,621
Idaho	524,319	- 97,800	426,519
Illinois	2,219,135	- 324,200	1,894,935
Indiana	1,879,905	- 290,200	1,589,705
Iowa	2,003,396	- 306,200	1,697,196
Kansas	1,303,178	- 183,100	1,120,078
Kentucky	2,459,784	- 302,400	2,157,384
Louisiana	1,595,676	- 183,600	1,412,076
Maine	499,685	- 83,400	416,285
Maryland	724,311	- 126,100	598,211
Massachusetts	577,802	- 105,900	471,902
Michigan	2,043,247	- 301,200	1,742,047
Minnesota	1,909,632	- 285,800	1,623,832
Mississippi	2,505,311	- 278,300	2,227,011
Missouri	2,178,735	- 283,700	1,895,035
Montana	505,063	- 89,500	415,563
Nebraska	1,107,456	- 165,800	941,656
Nevada	164,092	- 46,300	117,792
New Hampshire	281,727	- 60,200	221,527
New Jersey	561,005	- 99,500	461,505
New Mexico	456,584	- 75,900	380,684
New York	1,962,886	- 295,300	1,667,586
North Carolina	3,420,061	- 446,900	2,973,161
North Dakota	763,485	- 121,300	642,185
Ohio	2,519,396	- 357,100	2,162,296
Oklahoma	1,630,576	- 167,500	1,463,076
Oregon	738,478	- 121,400	617,078
Pennsylvania	2,533,447	- 357,000	2,176,447
Puerto Rico	2,245,881	- 339,500	1,906,381
Rhode Island	169,752	- 46,800	122,952
South Carolina	1,815,511	- 229,600	1,585,911
South Dakota	764,628	- 121,800	642,828
Tennessee	2,503,093	- 314,100	2,188,993
Texas	3,797,777	- 391,000	3,406,777
Utah	347,489	- 64,900	282,589
Vermont	340,764	- 67,500	273,264
Virginia	2,059,087	- 267,100	1,791,987
Washington	911,270	- 144,800	766,470
West Virginia	1,257,431	- 150,000	1,107,431
Wisconsin	1,910,497	- 286,300	1,624,197
Wyoming	276,771	- 59,100	217,671
Subtotal	\$ 69,268,691	\$ - 9,600,000	\$ 59,668,691
Special need funds Sec. 3(b) Smith-Lever Act			
	\$ 1,544,909	\$ --	\$ 1,544,909
Funds for allocation Sec. 3(d) Smith-Lever Act:			
Pesticide-Chemical projects	2,100,000	--	2,100,000
Area Agents	700,000	--	700,000
Resource Development projects	--	6,700,000	6,700,000
Low Income projects	--	2,900,000	2,900,000
Appalachia projects	--	717,500	717,500
Federal administration and coordination Sec. 3(c)1 Smith-Lever Act			
	416,400	- 400,000	16,400
Agricultural Marketing Act funds (including contracts)			
	1,570,000	--	1,570,000
Total Smith-Lever and AMA	\$ 75,600,000	\$ 317,500	\$ 75,917,500

Table II

APPROPRIATION FOR PAYMENTS TO STATES AND PUERTO RICO

Basis of Allotment and Matching Required, F. Y. 1967

Item	Total Estimate 1967	Basis of Allotment	Amount Paid Without Matching	Amount Requiring Matching
Smith-Lever Act:	\$74,347,500:			
Section 3(b)		\$56,475,091--Fixed: by Sec. 3(b) of Public Law 87- 749	\$14,513,808	\$41,961,283
		1,544,909-- Special needs	- -	1,544,909
Section 3(c)		3,210,000-- \$1,277,440 by farm pop.; \$1,277,440 by rural pop.; \$638,720 equally; and \$16,400 for Federal Exten- sion Service administration: and coordina- tion Sec. 3 (c)1.	16,400	3,193,600
Section 3(d): Pesticides- chemicals funds		2,100,000-- Approved pro- jects	2,100,000	- -
Area agents		700,000-- Approved projects	700,000	- -
Resource Develop- ment funds		6,700,000-- Approved projects	6,700,000	- -

(Continued on next page)

Basis of Allotment and Matching Required, F. Y. 1967--Continued

Item	Total Estimate 1967	Basis of Allotment	Amount Paid Without Matching	Amount Requiring Matching
Low-Income Work funds		2,900,000-- Approved projects	2,900,000	- -
Appalachian Area funds		717,500-- Approved projects	717,500	- -
Agricultural Marketing Act	1,570,000	1,570,000-- Approved pro- jects and contracts	a/ 75,000	1,495,000
Total	75,917,500	75,917,500	27,722,708	48,194,792

a/ Regional marketing contracts.

TABLE III

SOURCES OF FUNDS ALLOTTED FOR COOPERATIVE EXTENSION WORK IN THE STATES AND PUERTO RICO

Fiscal Year 1966

States	Total Funds	Total Federal Funds	Total Funds From Within States	Source of Federal Funds		Source of Funds From Within States		
				Smith Lever Act	Agricultural Marketing Act*	State	County	Non-Tax
Alabama	\$ 6,117,489	\$ 2,493,452	\$ 3,624,037	\$ 2,458,452	\$ 35,000	\$ 2,508,491	\$ 1,022,181	\$ 93,365
Alaska	405,652	221,920	183,732	221,920	---	183,732	---	---
Arizona	1,470,840	527,589	943,251	520,589	7,000	861,601	81,650	---
Arkansas	4,703,503	2,030,174	2,673,329	2,007,474	22,700	2,064,304	476,117	132,908
California	10,253,057	1,974,883	8,278,174	1,929,883	45,000	6,314,709	1,882,399	81,066
Colorado	2,474,656	832,380	1,642,276	801,915	30,465	948,668	681,788	11,820
Connecticut	1,433,271	464,232	969,039	455,972	8,260	619,982	339,557	9,500
Delaware	562,378	260,812	301,566	236,812	24,000	252,395	10,000	39,171
Florida	4,275,313	981,204	3,294,109	965,204	16,000	2,007,626	1,286,483	---
Georgia	7,046,968	2,668,223	4,378,745	2,624,723	43,500	2,913,243	1,412,452	53,050
Hawaii	1,137,279	376,396	760,883	358,396	18,000	760,883	---	---
Idaho	1,950,486	653,096	1,297,390	640,796	12,300	904,390	393,000	---
Illinois	6,090,345	2,323,692	3,766,653	2,294,792	28,900	2,741,137	38,500	987,016
Indiana	5,343,603	1,995,956	3,347,647	1,950,256	45,700	1,762,355	1,527,000	58,292
Iowa	6,057,729	2,119,987	3,937,742	2,080,387	39,600	2,074,775	1,753,000	109,967
Kansas	5,724,916	1,452,714	4,272,202	1,401,790	50,924	1,414,586	2,616,616	241,000
Kentucky	5,246,993	2,591,734	2,655,259	2,535,734	56,000	1,735,996	814,863	104,400
Louisiana	5,377,090	1,668,087	3,709,003	1,635,676	32,411	3,391,150	302,653	15,200
Maine	1,289,034	552,965	736,069	534,215	18,750	488,474	211,628	35,967
Maryland	3,152,374	808,018	2,344,356	761,018	47,000	1,823,724	520,632	---
Massachusetts	2,231,652	659,302	1,572,350	601,802	57,500	609,174	963,176	---
Michigan	6,262,569	2,264,513	3,998,056	2,129,513	135,000	2,599,500	1,142,510	256,046
Minnesota	4,146,801	2,037,564	2,109,237	2,007,414	30,150	1,026,662	1,049,890	32,685
Mississippi	5,075,691	2,653,053	2,422,638	2,619,037	34,016	1,495,000	912,898	14,740
Missouri	5,778,263	2,348,520	3,429,743	2,281,470	67,050	2,232,918	1,040,859	155,966
Montana	1,619,659	634,363	985,296	624,363	10,000	435,750	540,603	8,943
Nebraska	3,436,232	1,198,355	2,237,877	1,190,655	7,700	1,450,054	783,823	4,000
Nevada	819,244	272,192	547,052	272,192	---	377,025	170,027	---
New Hampshire	929,394	321,527	607,867	309,527	12,000	354,065	253,802	---
New Jersey	2,816,440	618,400	2,198,040	601,400	17,000	1,372,054	825,986	---
New Mexico	1,753,288	593,181	1,160,107	569,421	23,760	840,117	319,990	---
New York	9,413,680	2,105,288	7,308,392	2,045,371	59,917	2,720,338	3,997,456	590,598
North Carolina	9,509,605	3,607,829	5,901,776	3,535,829	72,000	3,504,876	2,381,200	15,700
North Dakota	1,918,356	876,430	1,041,926	866,430	10,000	475,636	566,290	---
Ohio	6,005,496	2,647,504	3,357,992	2,607,504	40,000	1,656,000	1,279,862	422,130
Oklahoma	4,486,450	1,759,880	2,726,570	1,693,380	66,500	1,839,985	798,599	87,986
Oregon	4,137,247	916,112	3,221,135	865,290	50,822	2,544,800	676,335	---
Pennsylvania	5,145,903	2,618,405	2,527,498	2,589,225	29,180	1,827,498	700,000	---
Puerto Rico	3,806,038	2,298,934	1,507,104	2,298,934	---	1,379,104	---	128,000
Rhode Island	451,834	213,812	238,022	209,752	4,060	199,322	31,325	7,375
South Carolina	3,406,110	1,895,403	1,510,707	1,891,703	3,700	1,332,957	176,550	1,200
South Dakota	2,105,485	828,466	1,277,019	819,666	8,800	958,785	318,234	---
Tennessee	5,419,821	2,600,474	2,819,347	2,573,674	26,800	2,067,888	751,459	---
Texas	9,398,413	4,023,979	5,374,434	3,993,979	30,000	2,643,035	2,676,168	55,181
Utah	1,392,743	503,830	888,913	485,609	18,221	684,500	204,413	---
Vermont	1,026,349	389,944	636,405	376,664	13,280	514,280	122,125	---
Virginia	5,882,182	2,137,819	3,744,363	2,110,819	27,000	2,969,705	774,658	---
Washington	3,134,421	971,370	2,163,047	946,570	24,804	1,389,673	773,374	---
West Virginia	2,422,992	1,313,970	1,109,022	1,306,970	7,000	676,046	432,976	---
Wisconsin	5,627,866	2,020,236	3,607,630	1,998,236	22,000	1,920,106	1,687,524	---
Wyoming	1,099,703	405,773	693,930	400,543	5,230	475,312	218,618	---
Unallotted	374,654	---	---	374,654	---	---	---	---
AMA Contracts	75,000	75,000	---	---	75,000	---	---	---
GRAND TOTAL	201,222,557	75,183,600	126,038,957	73,613,600	1,570,000	80,344,436	41,941,249	3,753,272

* Preliminary Distribution

Table IV

COOPERATIVE EXTENSION AGENTS, BY ORGANIZATION CLASSES

Extension Workers by Organization Classes	: July 1, 1963	: July 1, 1964	: July 1, 1965
<u>State Workers:</u>	:	:	:
Directors and administrative personnel.....	: 257	: 267	: 271
Specialists.....	: 2,994	: 3,187	: 3,397
Total, State staff.....	: 3,251	: 3,454	: 3,668
<u>County Workers:</u>	:	:	:
Supervisors.....	: 718	: 718	: 720
Agricultural agents <u>a/</u>	: 6,692	: 6,617	: 6,483
Home Economics agents <u>a/</u>	: 4,172	: 4,227	: 4,233
Total, county staff.....	: 11,582	: 11,562	: 11,436
Grand Total.....	: 14,833	: 15,016	: 15,104

a/ Includes 4-H Club agents.

APPALACHIA PROGRAM

Under Public Law 89-16, Title II, approved April 30, 1965, a supplemental appropriation of \$750,000 was made available for two years to the Extension Service to carry out educational programs and activities in the Appalachian region. Of this amount, \$717,500 was made available under the subappropriation item "Payments to States and Puerto Rico" for allocation to the Appalachian region, and \$32,500 for the item "Retirement and employees' compensation costs for extension agents."

Due to the timing of the Act and the necessity to approve project proposals submitted by the States in the Appalachian region, most of the funds were obligated late in June of fiscal year 1965. The balance will be obligated in fiscal year 1966. These funds are reflected in the Project Statement under Cooperative Extension Work, Payments and Expenses on an appropriation basis. The following table reflects them on an availability basis.

PROJECT STATEMENT

Project	1965	1966 : Estimate	Increase	1967 : Estimate
1. <u>Payments to States and</u>				
<u>Puerto Rico:</u>				
a. For cooperative agricultural				
extension work under the Smith-				
Lever Act.....	\$669,000	\$48,500	+\$669,000	\$717,500
2. <u>Retirement and Employees' Com-</u>				
<u>pensation Fund costs for extension</u>				
<u>agents.....</u>	- -	32,500	- -	32,500
3. <u>Federal Extension Service.....</u>	- -	- -	- -	- -
Total obligations.....	669,000	81,000	+ 669,000	750,000
Unobligated balance carried forward..	81,000	- -	- -	- -
Unobligated balance brought forward..	- -	-81,000	+81,000	- -
Total available or estimate.....	750,000	- -	+750,000	750,000

STATUS OF PROGRAM

The Cooperative Extension Service is carrying out an intensified program of education to meet the special needs of rural America.

Its varied programs are designed to achieve better family living, more efficient output of farm products, better facilities for the rural community, and greater opportunities for youth of all ages, races, and income levels.

It is attaining these goals with a highly skilled team of rural leaders. The 15,000 extension agents and a million or more volunteer leaders bring into every facet of rural life the best in training and information.

The county extension agent long has been the key figure in this battle to improve the lot of rural America. Today the county extension agent has a new ally; the area agent has been brought rapidly on the scene to provide more specialized educational services. More than 550 of these area specialists are now employed in the States to help solve the many difficult problems facing agriculture and rural communities. Their more specialized training has equipped them to deal with the most complex tasks in the physical, economic, and social sciences as they relate to agriculture and rural development.

A recent survey by the Federal Extension Service reveals that extension workers in the 3,000 counties devoted more than 2.8 million man-days in 1964 to serving farmers, their families, and residents of neighboring towns and communities. This included the work of county and area agricultural agents, home economists, and 4-H Club agents.

On the basis of people served, these extension agents gave 51 percent of their time to helping farm residents. About 29 percent was devoted to rural nonfarm people, and the remaining 20 percent to urban residents. Much of the "urban" service was for people in towns of less than 10,000 population.

When compared by income levels, extension personnel worked about 39 percent of their time with people in the low-income bracket (less than \$3,000 a year per family). Most of this work was with rural residents.

From the standpoint of types of programs, one-third of extension personnel time was devoted to farm and agricultural business. Agents provide educational services on such subjects as plant diseases, soil testing, animal nutrition, entomology, agricultural chemicals, and the marketing of food, feed, and fiber.

Youth programs were a close second, occupying nearly 33 percent of extension agents' time--mostly in 4-H Club programs but also in other youth activities. Extension 4-H education is focused on the needs of boys and girls 9 to 10 years old. Training in 4-H fits youth not only for individual achievement but also teaches them to take leading roles in community improvement.

Agricultural Production and Management: Strengthening of the family farm as a basic unit of American agriculture is a major goal of the Cooperative Extension Service. Examples of the Service's activities in this area include:

New Tools of Education: Three new educational tools--electronic data processing, linear programming, and intensive farm management training--are being used to help farmers develop management skills and make sound decisions.

Intensive farm management training courses were used last year by the Cooperative Extension Service in 42 States to reach nearly 100,000 farmers. The courses averaged 12.4 hours of instruction. Each course was designed to meet the needs of specific audience groups such as top commercial farmers, beginning farmers, or low-income farmers.

Electronic data processing is being adopted to help farmers keep business records and use the data in analyzing management problems. In 30 States, about 5,000 farmer cooperators are using this technique to provide complete management analysis of their farm business. A uniform coding system has been developed to obtain wider use of this service.

Linear programming is being adapted to help producers make optimum use of their resources. Extension Services are using this technique in 17 States to assist producers in decisions ranging from least-cost programming of rations to planning the optimum types and balance of enterprises for best use of total farm resources.

Beef cattle improvement programs have been expanded to emphasize selection of breeding animals for quality beef with less waste fat as well as for most efficient weight gains. Number of beef herds cooperating in this program increased from 5,830 to 7,770 last year, and the number of brood cows tested increased from 431,000 to 565,000. Bulls tested for rate of gain increased from 24,147 to 35,018. Standard procedures for measuring performance and carcass quality were adopted through cooperation with the purebred livestock industry, State beef cattle improvement associations, and cooperative extension and research services under the leadership of the Federal Extension Service.

The nationwide educational program on swine improvement is resulting in leaner pork for consumers at essentially the same price levels. Improved meat-type hogs and more efficient feeding and management are making this possible. For example, the number of hogs grading No. 1 in western Kentucky was increased from 20 to 80 percent since the program began,

and annual net income of hog producers in the area has increased almost \$1.3 million. Swine testing programs developed by Extension in cooperation with swine breeder organizations enable producers to identify superior meat-type breeding stock.

In the United States, estimated annual losses to various crops caused by nematodes ranged from 2 to 8 percent of expected yields. Arkansas serves as an example of what Federal and State Extension is doing about this problem. Through educational efforts of Extension personnel, Arkansas growers are now fumigating 20,000 acres of infested land with nematocides. This practice enables efficient and profitable production of crops on previously infested low-yielding land.

Pesticides are being used more safely because of the nation-wide educational program on their safe and proper use started by the Cooperative Extension Service in 1964. A year earlier, 3,000 of the 8,000 peach pickers in the San Joaquin Valley of California were poisoned by malathion with 94 needing medical treatment. During the year following initiation of the program, only one case was reported. Results of the program were also reflected in Florida where the percentage of residue violations reported in 1964 was the lowest during the six-year history of the regulatory program. All States now have committees to coordinate pesticide educational work. About 3,300 intensive training courses were held for commercial pesticide applicators, dealers, producers and other users of pesticides during the past year.

Farmers will have much lower wiring costs because of changes made in the National Electric Code. These changes were the result of a cooperative study between Extension, Research, and industry. The study was initiated by the Agricultural Extension Service through the professional agricultural engineering society. The code previously required wiring to meet the maximum demand for simultaneous operation of all equipment. The new realistic version considers power demand diversity factors established by this study and adopted into the code.

State, regional, and national plan exchange services support commodity and governmental programs, including low-income housing, recreation, civil defense, and others having structural design needs. In these services, conducted by Extension, plans are designed and selected by Extension engineers and checked by Research engineers to meet specific needs. In 1964, nearly a quarter million (235,853) plans were distributed. Most of the Nation's agricultural construction can be traced to the use of guides prepared through this service.

Home Economics Extension: Home economics emphasis today is on selection, use, and care of goods and services produced by others; making use of services available to the community; management of money, credit, and other family resources in order to provide family needs in a cash economy; and other consumer concerns.

The 4,000 extension home economists located at the county level reach by direct contact almost 9,000,000 families, 29 percent of whom have low incomes. Many more are reached by radio and television programs, newspapers, and magazines, or helped by friends who learned from Extension home economists. Activities include:

Training and Teaching Materials: Federal, State, and county staffs have participated in workshops, conferences, and seminars to retrain for the job. In the last 2 years the Division of Home Economics has assisted more than 30 States with retraining sessions. Training has given Extension understanding of some of the characteristics of these families, factors contributing to poverty, knowledge of other agencies and organizations with goals similar to theirs, and confidence in their ability to work successfully with the poor.

It has been necessary to develop new teaching materials to accommodate functional illiteracy or low-reading levels. Since many poor families lack common household tools and equipment found in middle-class homes, this, too, meant changes in teaching materials and techniques.

The Division of Home Economics has devoted most of its time in recent months to the development of materials to support and implement the training and use of the nonprofessional leader in this work. Federal Extension Service specialists have spent much of their field time helping their State counterparts write low-reading-level publications, devise visuals, and teaching methods for this work.

Nonprofessional Help--Volunteers: By using the reservoir of trained volunteer leaders, working through and with public health and welfare agencies, local public housing authorities, private organizations such as YWCA, Salvation Army, and church groups; and directing existing professional resources in this direction, poor families are being reached.

Kentucky reported 60 projects in 39 counties reaching 3,500 low-income families in the first 6 months of 1965. Members from one Fayette County, Kentucky, home economics Extension club worked at the Salvation Army headquarters with nearly 70 women from the surrounding slum area. Only about 15 percent of them read well enough to use a printed recipe. The home economist helped the volunteers teach personal grooming, use of donated foods, and good nutrition, as well as housekeeping skills, clothing construction, and child care.

The home economists in Neuces County, Texas, by using volunteer non-professional leaders and professional leaders from other agencies, accomplished results in an area where two-fifths of the population are in low socio-economic status, mostly Latin Americans. Eighty-five leaders helped reach more than 7,000 persons of different ethnic groups on use of donated food. Twenty-two leaders worked with 967

families on clothing problems (80 such leaders are now being used). Trained leaders assisted 322 families in one housing authority, and 315 families have been helped with management problems. The work has involved preparation of bilingual materials.

Nonprofessionals--Paid: Extension home economists have been experimenting with training paid nonprofessionals to carry on work with hard-to-reach families. A pilot project in four Alabama counties shows promising results in its first year. About 150 families have been worked with successfully, usually on an individual basis.

In cooperation with public housing authorities in Erie, Pennsylvania, and Wilmington, and Dover, Delaware, paid housekeeping aides have been trained by the Extension home economist and employed by the housing authority to teach housekeeping skills to residents. In Erie, 9 aides are serving 1,500 residents; and in Wilmington, the original 7 aides have been increased to 17 who serve 1,600 families.

The Milwaukee, Wisconsin, home agent has trained nearly 300 ADC mothers. About 60 serve as home management aides for welfare, each working with 3 or 4 families intensively. Aides thus earn their welfare checks. About one-fifth of the trainees have secured paid employment and removed themselves from welfare roles.

Head Start: County Extension home economists were the motivating force behind many rural Head Start programs. Special efforts made in 344 lowest income rural counties resulted in 182 projects in 1965; 862 other rural counties also had projects.

Extension home economists conducted classes for Head Start parents in many communities. West Virginia and Kentucky both developed special materials for these classes. Many parents are now being helped through regular Extension channels. Hundreds of Extension homemaker club members volunteered their assistance in teaching parents, clothing and feeding children, and caring for infants and toddlers while mothers participated in classes.

Kanawha Area Project: The interest of the Extension home economist in helping young children in poor families and, through children, helping parents to a more tenable existence, predates Project Head Start.

Most noteworthy at this time is the Kanawha Area Project, now in its second year. This pilot project is being conducted with about 150 families in three isolated rural areas, and was started with a nursery school-type activity in each of the three communities. The mothers of the children helped and in turn were helped. Fathers and older boys and girls helped equip the centers with homemade and re-made equipment and furnishings.

A color movie, "Spring Comes to Vintroux," shows what has begun to happen to people because someone cares.

Minority Groups: Negro, Indian, Spanish-American, and other minority groups are a large part of the poor families worked with.

Texas, New Mexico, Washington, and Wisconsin all report special efforts to reach Spanish-speaking families with special materials. Extension home economists are working with Indian families both on and off reservations.

White, middle-class volunteer leaders have successfully taught house-keeping and homemaking skills to Negro homemakers in low-rent public housing units in Lake County, Indiana. The volunteers were trained by the home economist and the audience was initially contacted by welfare workers. Because of skills learned and self-confidence established, about one-fifth of the participants secured employment.

Senior Citizens: The home economics Extension program has extended its outreach to the special needs of senior citizens, many of whom have limited incomes but whose motivations differ from those of young families or those in low economic levels of society. For example: The home economist in Ramsey County, Minnesota, is holding a series of three lessons in food buymanship for residents of a senior citizens' apartment development. Hinds County, Mississippi, Extension homemakers have been devoting regular time to teaching simple crafts to older people in the Jackson Senior Citizens' Center. Jefferson County, Kentucky, homemakers made 1,752 visits on senior citizens in their county and helped 785 learn about services and opportunities available to them in the county.

Young Homemakers: Nearly 2 million homemakers are now reached through special interest projects, often taught in a series of three or more sessions and planned around the specific needs of the clientele on a limited problem area. The participants in these special projects are usually women with young children, interested in what they can learn to help solve their family problems. This is an important clientele group, whatever their income, place of residence, or social status. Family stability and the care and nurture of future citizens depend upon the way these mothers can carry out their jobs.

Money management, child care, nutrition and clothing construction are some of the subjects studied. For example, nearly 300 home economists have conducted a series of six lessons on "Food for the Young Family." The series is based on the needs of this specific group as revealed in taped interviews with more than 200 young homemakers. The materials used have now been revised and the project will be launched nationwide in the next few months.

Correspondence Courses: Not all homemakers who need or want help on family living problems are able to participate in meetings. Some with adequate motivation and educational level can be reached through correspondence courses, as shown by the experience of New Jersey home agents. One newspaper announcement of the first course offered brought more than 300 responses. One hundred and nine were enrolled for the first course, and 86 completed the 6-lesson course. No additional announcements are necessary since satisfied customers keep the agent supplied with more enrollees than she can handle with her workload.

Teenage Nutrition: Research has shown teenage boys and girls, even those in high income and social status, are the poorest fed members of our society. The nutrition of teenaged girls is an even greater problem than of boys. This is particularly important because of the increasing number of teenaged mothers. The health of the baby as well as that of the young girl is involved.

Under the leadership of the Federal Extension Service nutrition specialist, during the past 5 years, projects developed with teenaged boys and girls have helped to develop an awareness of the problem and progress toward diet improvement. A recent article in Parade, a syndicated Sunday newspaper supplement, brought a flood of letters to the specialist from teenagers, parents, and educators.

Extension Homemaker Clubs: Almost 1-1/3 million homemakers belong to organized groups who meet regularly with a planned educational program built around the particular needs of their families. These groups are mostly self-sustaining. They depend upon the home agents for training in subject matter and organizational leadership, but their own leaders conduct the business and teach the educational program.

Since leadership responsibilities are passed around, more than 500,000 leaders are trained and active each year. In addition to improved family living from knowledge and skills acquired as a result of subject matter taught, the reservoir of trained leadership is proving invaluable in community development programs and in efforts to reach those families who do not readily seek educational assistance or who have not known about its availability.

These steps have been taken by the Extension home economists to meet the needs of all families as they cope with the problems of modern social change. Average workloads of more than 15,000 families per home economics Extension worker and limited funds for necessary teaching materials and for an adequate paid nonprofessional corps of program assistants, restricts expansion of the program.

Service to Youth: The Extension 4-H program is being constantly adjusted to serve the Nation's youth. Some major developments in this program include:

- a. Expanded programs for youth of disadvantaged families
- b. New programs to improve employability of youth
- c. Increased emphasis in leadership and citizenship development
- d. More programs relating to conservation and wise use of leisure time
- e. Serving a larger number of rural nonfarm and urban boys and girls

It is estimated that 32.7 percent of the total Extension staff time is devoted to "service to youth"--45.4 of this time was devoted to farm youth; 36.3 percent of the time was devoted to work with rural nonfarm youth and the balance of 18.3 percent was spent in work with youth of urban areas. Approximately 39.3 percent of the Extension time devoted to youth work was with youth of low-income families.

This program is carried out primarily through 96,000 4-H Clubs. The membership in these clubs exceeds 2-1/4 million youth 9 to 19 years of age. These clubs are located in every State and every county in the Nation. They are under the immediate supervision of over 400,000 adult volunteer leaders who are assisted by 150,000 junior leaders.

A wide range of "learn-to-do-by-doing" projects is available to meet the needs and interests of youth participating in the program. 4-H Club work helps youth develop basic skills, knowledge, and attitudes. It provides a sense of "belonging" to the group and a channel for youth to serve their community.

A summary of 4-H educational projects completed in 1964 follows:

<u>Types of Projects</u>	<u>Enrollment</u>
Junior Leadership and Community Study	427,000
Personal Development and Career Exploration	635,000
Income Producing	1,305,000
Health, Nutrition, Safety	1,630,000
Home and Family Living	1,207,000
Conservation and Recreation	856,000
Engineering and Science	430,000

Examples of projects conducted include:

Youth of Low-Income Families: A special demonstration project is being carried on in St. Frances, Lonoke, and White Counties, Arkansas, where young people are organized into small informal groups and are being taught by program aides who are trained and supervised by the county extension agents. Elementary educational materials and methods are used. The program includes health practices, nutrition, personal hygiene and grooming, use of basic tools, home improvement, and similar projects that help disadvantaged youth develop a confidence in themselves and higher personal aspirations for the future. A discarded bus was reconditioned with private funds under Extension leadership and is used as a mobile training center.

Improve Employability of Youth: Club work has been a vital factor in helping youth choose their careers and motivating them to continue their education. Kansas State University found that 55.4 percent of the students in the College of Agriculture and 46.4 percent of the students in the College of Home Economics were former 4-H members. During the 1965 Kansas 4-H Roundup, 1,000 4-H delegates explored careers with the help of Kansas State University faculty members. Approximately 75,000 4-H members in the United States participated in special local career exploration programs last year.

Appreciating Science and Technology: A tractor clinic staged by a group of Maryland 4-H members with the help of their 4-H leaders attracted 300 farmers. Many brought their tractors. A series of stations was set up and manned by dealer mechanics and 4-H tractor project participants. The boys demonstrated that the horsepower of a majority of tractors could be improved by using the knowledge gained at the clinics. The 4-H members continue to hold tractor improvement clinics for farmers in the county.

4-H Club members of Florida, Minnesota, and North Carolina are cooperating with the NASA Goddard Space Flight Center in the collection of fireflies for some special research contributing to man's knowledge of the biosphere. The collection was an important service project; likewise, it expanded the member curiosity and knowledge of space research.

Citizenship and Leadership Development: Club members of McCracken County, Kentucky, utilized the 4-H automotive safety program as the method to make an important contribution to the welfare of the citizens of that county. The 650 young people enrolled in 15 automotive project clubs were responsible for staging a county-wide safety jamboree and a safe driving road-e-o. The automotive dealers, the county police and the county press jointly supported the 4-H members in their all-out effort to reduce the injuries and fatalities on McCracken County highways.

In the past year, 200 adult new volunteer leaders in West Virginia received training from other volunteer leaders. This development is multiplying the service of the county extension agent many-fold in many States.

Wise Use of Valuable Resources--Beautify America: Georgia 4-H members had an important part in the State campaign "Make Georgia Beautiful Week." The records show they "policed" 937 miles of streets and highways, picking up 362 truckloads of litter. They helped plant 413,762 dogwoods along the State's main highways. The program was so successful that 4-H members plan to repeat it annually. A comparable comprehensive program was conducted in many States.

In Menominee County, Wisconsin, through their desire to do something for their county, 4-H members developed a "Tourist Guide Service." A series of classes was arranged for a group of selected junior 4-H leader guides. They studied the resources, government, history and culture of the Menominee Indians and passed a comprehensive examination to qualify as guides. The 4-H members developed a deeper understanding of Menominee heritage and gained confidence and praise through their contact with visitors.

Community and Resource Development: Rural communities throughout the United States are no longer concerned with agriculture alone. They are concerned with many other types of resource development. Many are rapidly changing to non-farm and suburban interests. Consequently, Extension is adjusting its educational programs to serve these new needs and interests.

Extension is providing organizational and educational assistance to total resource development programs, including introduction and expansion of rural industries, training and retraining of unemployed and underemployed people, technical assistance in establishing and managing many types of outdoor recreation enterprises, guidance and training in local, national, and international public affairs issues, and promotion and planning of beautification programs.

Approximately 100,000 lay leaders participate in resource development work through RAD committees organized by the Cooperative Extension Service. Forty-four States and 2,100 counties have RAD committees.

Economic Opportunity Programs: Extension has assisted 180 area groups with resource development activities involving two or more counties. Federal and State Extension Services are assisting in the organizational work in the Upper Great Lakes Region involving a regional development committee representing Michigan, Wisconsin, and Minnesota. The Federal Extension Service has furnished all States information about the Economic Opportunity Act, and related programs such as the Vocational Education Act, Manpower Development and Training Act, Public Works and Economic Development Act, Higher Education Act, Appalachian Act, and Primary and Secondary Education Act.

Extension is assisting local groups to implement the Economic Opportunity Act in low-income rural counties. Extension agents assisted in initiating the work in 733 counties this year. In 329 counties the local county RAD committees initiated the work. In many counties the Extension personnel have provided training for the nonprofessionals used in the OEO programs, and have helped local leaders and other agencies plan and implement community action programs. Illustrative of Extension's role in this work is a letter to Iowa's Governor Harold Hughes from C. E. Gilmour, director of the State's Economic Opportunity Program, in which he said, "had it not been for the willing and effective cooperation of the Extension Service, we could not have completed half of this goal. . . ."

Helping Young People: Head Start programs have been in operation in 182 of the lowest income counties and in 862 other rural counties. Reports show that Extension home agents have been instrumental in initiating, organizing, and helping to locate personnel, and in developing companion programs in nutrition, child care, and home management for mothers of Head Start children.

State Extension Services have assisted in developing VISTA projects in 20 States, and 13 States have been using VISTA volunteers.

Extension workers have done much through regular programs and added special effort to inform young people about the Job Corps, Neighborhood Youth Corps and College work-study programs. Fifteen States have submitted Youth Corps project contracts and 29 States have participated in the college work-study program. They have employed 516 work-study students.

Rural Recreation: Throughout the Nation, Extension Services have taken the lead in providing education and assistance programs to landowners and others interested in developing outdoor recreation enterprises.

Sixteen States have held outdoor recreation seminars at the State University. The average attendance is around 125. These seminars have brought all of the forces working on outdoor recreation together and have brought about coordination of outdoor recreation efforts in several of these States.

One of the growing programs in Extension outdoor recreation education is the tourist service schools. For example, in Minnesota the Extension Tourist Travel Specialist is working with an industry that contributes 350 million dollars annually to the economy of the State of Minnesota. This past year he conducted 24 community hospitality schools, reaching approximately 1,440 people, and 17 resort management institutes, reaching approximately 680 people--with the cooperative effort of the Minnesota Department of Education and local civic groups. This includes assessing the value of and responsibility for having a traveler in a community; basic instruction in the art of hospitality; and increased knowledge as to the historical and recreational opportunities around the community.

He also sends out the Minnesota Tourist Travel Notes, which go to 5,000 tourist businesses. This type of program has been carried on in Wisconsin, Michigan, Colorado, and on an area basis in several other States.

In Vermont, the Extension specialist developed cooperation with eight different kinds of recreation enterprises to establish demonstration units. They are collecting attendance, income, and cost information from these demonstration units. The units will be used for educational meetings and for development of educational bulletins in the future.

Extension has been responsible in several States for developing organizations of enterprise owners. In Michigan and Illinois, State associations of rural recreation enterprise owners of all types have been organized in one group. In Pennsylvania, Vermont, Ohio, Arkansas, and several other States, farm vacation associations, family campground owners' associations, fee fishing operators' associations and others have been formed. Education programs are being carried through these associations which have the advantage of working cooperatively on promotion, the provision of liability insurance, and many other problems.

Public Affairs Programs: A total of 76 State Extension specialists assist county Extension workers with all types of public affairs educational programs. These range from a single meeting to a year-long series of discussion meetings on controversial issues of concern to growing and changing communities. In some areas, school consolidation, taxation, local government, and bond issues are of prime interest. Agricultural chemicals, stream pollution, rural zoning, and sanitation also are of great concern. Agricultural programs and policies take most of the time in many States.

An example of such work is an educational effort by the Southern Regional Extension Public Affairs Subcommittee on Cotton. This subcommittee met in August and planned a program to help farmers and county Extension workers follow and understand the various proposals for cotton legislation in the proposed Food and Agriculture Act of 1965. Each State (Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Oklahoma, and South Carolina) prepared introductory material. The House and Senate proposals regarding cotton were considered. Sample budgets were set up under each set of proposals, and farmers were instructed in how to evaluate alternatives open to them under each of the proposals. Farmers and agricultural workers have increased their understanding of both the economics of cotton programs and the procedure through which proposed legislation moves to final enactment by following this legislation. The chairman of this subcommittee reports that he has had overwhelmingly favorable reaction to this program from farmers and agricultural workers.

Each State Cooperative Extension Service has designated an Extension Program Leader in Natural Beauty. A recent nation-wide study showed county Extension workers spending 546 man-years on home grounds beautification during a one-year period. They reached more than 6 million people, 25 percent of whom had annual family incomes of less than \$3,000.

Marketing Programs: Marketing education is an important component of the total Extension program. It assists in reducing marketing costs, increasing returns to producers, and assuring consumers of an adequate supply of high-quality food and fiber at reasonable cost.

An example of this coordinated approach is the program conducted with the pork industry. Major emphasis has been placed on work with producers, marketing organizations, and meat processors to market pork which would more clearly meet the preferences of consumers. Improved marketing practices combined with improved breeding and feeding practices have lowered the yield of lard per hog from 33.8 pounds in 1951 to an estimated 27 pounds in 1965. This is a 20 percent decrease. Total lard output decreased despite increased slaughter and heavier hogs because more lean or meat-type hogs were marketed.

Educational Work with Producers: State Extension Services disseminate information aimed at helping producers decide what, when, where, and how to market. This includes marketing and outlook information and product specifications of the organizations to whom they market. Other subjects are requirements for bargaining, State and Federal market orders, alternatives through cooperatively marketing output and purchasing farm inputs, and opportunities for direct marketing and in foreign trade.

Expenditures by producer commodity groups in advertising and promotion exceed 100 million dollars per year. To meet requests from commodity groups for educational assistance, the Federal Extension Service, under contract with Purdue University, developed educational materials for use by State Extension workers. Training sessions for extension specialists were held to increase their competency and skills in conducting educational programs on advertising and promotion of agricultural products. More than 60 State extension specialists are involved to some extent in this type of work in 40 States.

Marketing Work Aids Resource Development: Extension is helping many areas develop better marketing and purchasing facilities by assistance in evaluating feasibility, potentials, identification of market areas, establishment of the facility, and management organization. This is another example of team effort on the part of extension staff members trained in appropriate disciplinary areas. Extension food technologists have a significant role in assisting individuals and groups in

evaluating the feasibility of new processing facilities. Questions of suitability of raw materials, costs of processing, processing technology, packaging and storage, and equipment needs are faced in assessing the potential for establishing or expanding processing facilities.

Under sponsorship of the Federal Extension Service, the University of Illinois is developing additional educational materials for extension use in all States in conducting educational programs on market feasibility. In addition, over 15,000 copies of guidelines for evaluating the various economic considerations in determining marketing facility feasibility have been printed and widely used by extension specialists and agents and local development groups. These publications are: "Marketing Facility Feasibility" and "Economic Considerations in Determining Marketing Facility Feasibility."

Educational Programs with Marketing Firms: Extension helps marketing and processing firms, both cooperative and proprietary, remain competitive by improving operational and managerial efficiency through application of research results which reduce operating expenses related to procurement, storage, processing, merchandising, and in serving customers, and to make more effective decisions especially as related to long-range planning.

In helping rural people to solve their economic problems, Extension workers today assist cooperatives in such areas as director-manager relations, transportation, efficiency, member relations, market development, pricing, and quality control. A survey conducted in 1964 indicated that approximately 84 man-years of State extension specialist time and approximately 239 man-years of county extension agent time was devoted to such assistance.

An FES pilot project in Oregon produced subject-matter and teaching techniques which were presented to extension and key cooperative leadership through workshops. Another pilot project in Minnesota dealt with improving farm supply businesses, primarily cooperatives; providing educational materials on farm supply management, financial analysis, and control; budgeting; and warehousing. From these pilot projects in the past three years, extension specialists have helped cooperatives in 46 States analyze operations, finances, organizations, plant feasibility, and management. In the same period, over 20,000 managers and directors attended seminars designed to improve their proficiency.

Wood products marketing is receiving increased emphasis. Significant accomplishments in educational assistance to forest products marketing firms in 1965 were achieved through a pilot project conducted by FES under contract with North Carolina. A film on sawmill systems analysis was completed and is being widely used in extension programs on improving efficiency in sawmills.

It is estimated that decisions of 80 percent of the Nation's cotton ginners are affected in one way or another by Extension programs. During the past year, more than a thousand cotton gin operators throughout the central cotton-producing States attended a series of schools organized and conducted by Extension. The first electric cotton ginning clinic to be held in the mid-South was organized as a pattern for similar schools to be held throughout the five-State area.

Educational programs dealing with the economics of transporting agricultural products are being expanded. Other transportation educational programs underway in the States deal with ratemaking and rate changes, least-cost methods of transporting products to alternative markets, loss and damage of products in transit, etc.

Programs Applying Utilization Research: The application of utilization research by processing firms is essential to attaining the national objective of finding new and expanded uses for agricultural products. Cooperative extension specialists are responsible for making industry aware of research and providing information and assistance to aid in management decisions relative to the application of research to their operations. As an example, work is being conducted with paper and paperboard manufacturers to evaluate and subsequently adopt in their operations certain new cereal products developed or under development at the Northern Utilization Research and Development Division, ARS. In the past year, 23 paper and paperboard establishments and three specialty product firms were contacted by our FES specialist to acquaint them with these new cereal products. The paper and paperboard mills contacted represent collectively production of more than 12,600 tons per 24-hour day.

FARMER COOPERATIVE SERVICE

Purpose Statement

The Farmer Cooperative Service was established after approval of the Farm Credit Act of 1953 (Public Law 202, August 6, 1953). This Act transferred the functions subsequently assigned to the service from the Farm Credit Administration to the Secretary of Agriculture.

This Service is assigned the functions of programs authorized by the Cooperative Marketing Act of July 2, 1926 (7 U.S.C. 451-457) pertaining to cooperative marketing. It is also assigned the responsibility for research relating to the economic and marketing aspects of farmer cooperatives, as authorized by the Agricultural Marketing Act of 1946 (7 U.S.C. 1621 - 1627.)

The Service conducts research, advisory, and educational work with agricultural cooperatives to help farmers improve the operations of their businesses. Problems studied include organization, financing, management, merchandising, costs, efficiency, and membership. In performing this work, the Service cooperates with the Extension Service; Land-Grant Universities; Banks for Cooperatives; State Departments of Agriculture; and other federal, state and private agencies to improve understanding and application of sound cooperative principles and practices. It also advises other Federal agencies on problems relating to agricultural cooperatives.

The program of the Service is conducted through three operating divisions - Marketing, Purchasing, and Management Services.

Available Funds and Man-Years
1965 and Estimated, 1966 and 1967

Item	Actual		Estimated		Budget Estimate	
	1965		Available 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Farmer Cooperative Service:						
Salaries and Expenses	\$1,141,000	83	\$1,167,000	91	\$1,175,000	91
Obligations under other USDA appropriations:						
Miscellaneous reimbursements.	4,377	- -	3,000	- -	3,000	- -
Total, Agricultural Appropriation Bill	1,145,377	83	1,170,000	91	1,178,000	91
Other funds:						
Agency for International Development:						
Training of foreign participants	16,115	2	23,500	2	24,100	2
Special projects	36,466	1	103,500	4	98,700	5
Details of personnel	4,662	1	7,300	1	7,300	1
Total, Agency for International Development ..	57,243	4	134,300	7	130,100	8
Assistance to ARA program (Dept. of Commerce): Operations	10,559	1	- -	- -	- -	- -
Research and statistical services for the National Commission on Food Marketing ...	3,300	- -	27,700	2	- -	- -
Forest Service - for studies on forestry cooperative marketing methods	- -	- -	12,000	1	12,000	1
Miscellaneous reimbursements ..	1,800	- -	7,700	- -	6,700	- -
Total, Other funds	72,902	5	181,700	10	148,800	9
Total, Farmer Cooperative Service	1,218,279	88	1,351,700	101	1,326,800	100

Salaries and Expenses

Appropriation Act, 1966	\$1,141,000
Proposed supplemental, 1966, for increased pay costs	26,000
Base for 1967	1,167,000
Budget Estimate, 1967	1,175,000
Increase (to provide for full year costs of pay increases pursuant to P.L. 89-301)	<u>+8,000</u>

PROJECT STATEMENT

Project	1965	1966 (estimated)	Increases and Decreases			1967 (estimated)
			Increases Pay Costs (P.L. 89-301)	Other		
Research and technical assistance for agricultural cooperatives	\$1,121,987	\$1,167,000	+\$8,000	--		\$1,175,000
Unobligated balance	19,013	--	--	--		--
Total increased pay costs (P.L. 89-301)	(--)	(26,500)	(+12,000)	(--)		(38,500)
Total available or estimate	1,141,000	1,167,000	+8,000 (1)	--		1,175,000

(1) An increase of \$8,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

The Farmer Cooperative Service conducts research and provides advisory and educational assistance to improve the operations of cooperatives providing marketing, purchasing, and related business services for both farmers and other rural people. About 3 million farmers (four out of five) hold an average of two and one-half memberships each in cooperatives.

The research program of the Service includes studies of organization structure, financing methods, costs and efficiency, merchandising, management, and membership relations. The Service also makes advisory studies of specific organizations on request to solve specific organizational and operating problems.

The Farmer Cooperative Service disseminates information on cooperatives to further their sound development. It works with cooperatives, general farm organizations, land-grant and other universities, Federal and state extension services, state departments of agriculture, and other interested Federal and state agencies.

Current Activities and Trends:

Review of cooperative operations shows trends toward increasing size, mergers, consolidation, diversification, and integrated operations. In order to compete effectively cooperatives must increase their operating efficiency and strengthen their organization and management abilities.

Redirection of Program:

In accordance with the President's directive, recommendations of the National Advisory Committee on Cooperatives, and directives from the Secretary, the Farmer Cooperative Service is redirecting and revising its program in the following ways:

1. The Service is placing increased emphasis on broad problems of cooperatives, with decreased emphasis on a limited commodity approach. Four general projects now consolidate and coordinate work previously conducted on a commodity basis.
2. The Service is shifting, to the extent feasible, advisory service work to the Federal and state extension services and land-grant universities. We are planning to use \$65,000 in funds and manpower that will be released by this action during 1966 and 1967 to perform high priority research programs.
3. The Service is giving increased consideration to new services that cooperatives can provide in furthering the Department programs for assistance to low-income rural people.
4. The Service is consolidating and rewriting our research line projects, giving them broader scope, in order to provide better administrative control.

Selected Examples of Recent Progress:

Research

1. Improved Methods and Organization for Cotton Cooperatives. A series of research projects is nearing completion that point to methods of reducing ginning cost to farmers by \$5 a bale. Value of cotton can also be increased by \$1 to \$5 a bale through scientific blending. The various operating methods studied include choice between single and multiple gins, basket storage of seed cotton, and central ginning. Potential savings to U. S. cotton farmers from a full re-structuring of cotton ginning methods and marketing practices would be about \$100 million per year for the industry as a whole.
2. Knowledge and Attitudes Concerning Cooperatives. Research is underway in Kansas to identify factors and techniques that motivate member loyalty and bring about better public understanding of cooperatives. Public and member information programs of these cooperatives were reviewed. In a second phase of this study, it was found that urban people had good understanding, and favorable attitudes about the nature and operations of cooperatives.

Questions concerning functions of cooperatives and public policy showed less understanding, stronger beliefs, and less favorable attitudes. This research will provide valuable knowledge and recommendations to help cooperatives improve their information programs.

3. Bulk Feed Truck Operations and Cost. Preliminary findings in the study, including 110 bulk feed trucks operated by seven farmer cooperatives show: (1) direct truck operating costs averaged 48 cents a mile, (2) operating costs averaged \$2.89 per ton of feed delivered, and (3) direct costs were over three-fourths of total operating costs. This study will provide guidelines useful to cooperative officials in reducing costs of operating bulk feed trucks.
4. Pesticide Formulation and Distribution. Findings on this new cooperative service were published in a study of the work of two cooperatives which were the first in the South to mix and distribute liquid pesticides. The report indicates the facilities, policies, and practices used and how other associations might provide such a service to the benefit of farmers. One cooperative achieved savings of 5 percent for its members, and the other realized 15 percent savings. Other advantages to members were improved service and quality control. Total assets needed are moderate and within reach of other cooperatives.

Education

5. Cooperative Criteria. There has been a growing interest in developing a better understanding of the basic features of a cooperative organization. A study was made, with the cooperation of other agencies in the Department, to establish criteria that will identify distinguishing characteristics of cooperatives. On this basis a report, "Cooperative Criteria", was issued. This report will enable agencies of the Department to more effectively

carry out various regulatory and related programs within a common framework. The report also will assist cooperatives in improving features of their organization and performance as well as in their working contacts with the Department.

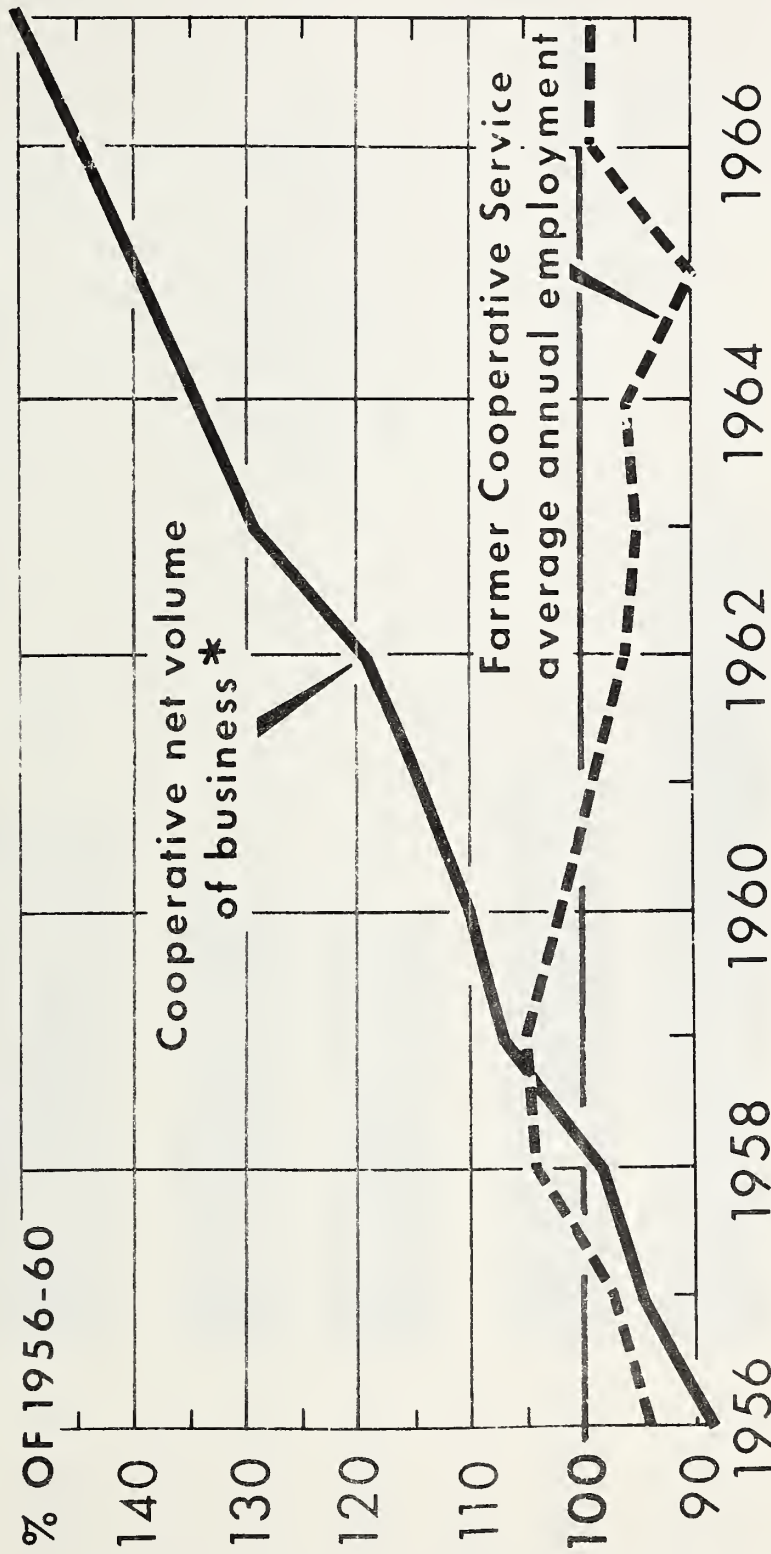
6. National Research and Teaching Conference in Agricultural Cooperation Sponsored. The Fourth National Research and Teaching Conference in Agricultural Cooperation, sponsored jointly by the Farmer Cooperative Service and the American Institute of Cooperation, and in cooperation with the Cooperative State Research Service, was held in Washington, D. C., April 12 through 14. This conference brought together representatives from some 30 colleges and in all was attended by approximately 80 persons from various sections of the country. Emphasis was on identifying important areas of research that should be undertaken. Attention also was directed to contents, methods, and materials for the teaching of cooperation in college courses; special courses for managers and directors; refresher courses for county agents, teachers of vocational agriculture, and foreign trainees from developing countries. This conference, too, examined new areas for cooperative research with particular emphasis on the role of cooperatives in low income rural areas and on differences and similarities on cooperative research needed in mature and developing countries.

Advisory Service

7. Studies of Grain Marketing and Transportation in the Northwest. The studies recommend that cooperatives in the three Pacific Northwest States consider jointly building and operating river houses on the Lower Snake River to reduce transportation costs for farmer members. Study findings show transportation savings of about \$300,000 a year would be possible if such river houses were available.
8. Analysis of Potential Cost Savings from Unified Marketing Operations. A study was made of potential cost savings from alternative systems for marketing fluid milk by four dairy cooperatives in western New York. The report shows that through unified market operations costs could be reduced by more than \$1 million annually. These cooperatives, representing about 1,800 dairymen marketing 600 million pounds of milk annually, have to date unified two of the cooperatives requiring assistance.

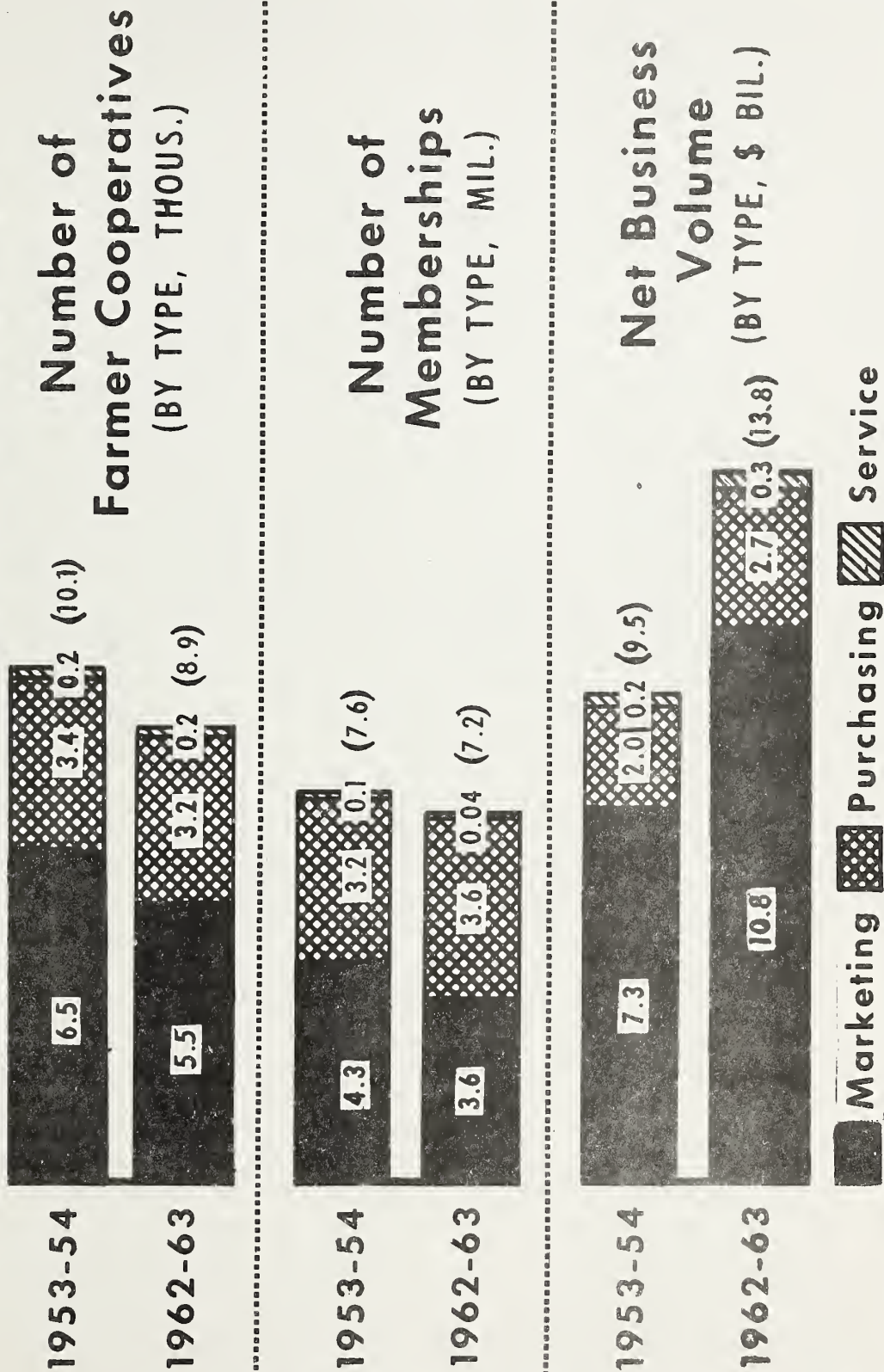
RELATION OF FCS EMPLOYMENT TO VOLUME OF BUSINESS OF FARMER COOPERATIVES

1956 Projected to 1967



* EXCLUDES INTERCOOPERATIVE BUSINESS.
AVERAGE ANNUAL EMPLOYMENT FOR 1966 AND 1967 ARE ESTIMATED.
COOPERATIVE NET VOLUME OF BUSINESS FOR 1964 THROUGH 1967 ARE
ESTIMATED ON THE BASIS OF AN AVERAGE ANNUAL INCREASE OF 4%.

UNITED STATES FARMER COOPERATIVES



U. S. DEPARTMENT OF AGRICULTURE

Figure 2



Table 1

Appropriations and Average Annual Employment

Fiscal Years 1957-1967 ^{a/}

Fiscal Year	Appropriation	Average Annual Employment		
		Total	Professional	Other
1957	\$ 767,121	89	50	39
1958	874,556	96	54	42
1959	920,901	97	54	43
1960	923,452	94	52	42
1961	971,184	91	51	40
1962	963,266	88	49	39
1963	1,012,174	87	49	38
1964	1,059,200	88	49	39
1965	1,141,000	83	48	35
1966	1,167,000 Est.	91 Est.	52	39
1967	1,175,000 Est.	91 Est.	52	39

^{a/} Includes Marketing Research Funds 1956-1963. Excludes employment under funds from non-Department sources (ARA and AID). Excludes OMS.

Farmer Cooperative Service
Table 2

Workload Statistics, Fiscal Years 1963-1965

Description	Fiscal Years		
	1963	1964	1965
I Publications and educational activities-			
A. Research-bulletins, circulars and reports	21	20	10
B. Advisory service case studies	26	27	23
C. Information reports, articles and speeches	81	109	96
D. Meetings sponsored or organized	21	13	22
TOTAL	149	169	151
II Line project activity-			
A. Active, beginning of year	72	70	69
B. Projects initiated	10	14	14
C. Projects discontinued	12	15	17
D. Active, end of year	70	69	66

SOIL CONSERVATION SERVICE

Purpose Statement

The Soil Conservation Service was established by the Act of April 27, 1935, (16 U.S.C. 590a-590f). It assists soil conservation districts, communities, and other cooperators, watershed groups, and Federal and State agencies having related responsibilities in bringing about physical adjustments in land use that will conserve soil and water resources, provide for agricultural improvements, and reduce damage by floods and sedimentation.

Conservation Operations Program Activities. The Service provides technical help to farmers and ranchers primarily through conservation districts in the 50 States, Puerto Rico, and the Virgin Islands, in carrying out locally-adapted soil and water conservation programs. As of June 30, 1965, farmers and ranchers had organized 2,989 conservation districts. The activities include (a) the making of soil surveys to determine land capabilities and conservation treatment needs and publishing of soil survey reports and maps useful to landowners and other Federal and State agencies and the public; (b) furnishing technical assistance to district cooperators and other landowners in developing plans and applying conservation treatments; (c) snow surveys in the Western States to develop stream-flow forecasts as an aid to efficient seasonal use of water for irrigation and other purposes; and (d) the operation of plant materials centers to test promising new species of plant materials for usefulness in soil and water conservation programs.

Watershed Planning Program Activities. The Service has general responsibility for administration of the Watershed Planning program including the development of guiding principles and procedures. The activity conducted under this program consists of (a) making investigations and surveys of proposed watershed projects in response to requests made by sponsoring local organizations, and (b) assistance in the development of watershed work plans. (Prior to the fiscal year 1965 watershed planning work was conducted as an activity under the Watershed Protection appropriation.)

Watershed Protection Program Activities. The Service has general responsibility for administration of the Watershed Protection program including the development of guiding principles and procedures. The activities include (a) cooperating with local sponsors, State, and other public agencies in installing planned works of improvement in approved watershed projects to reduce erosion, floodwater, and sediment damage, and to further the conservation, development, utilization, and disposal of water, including development of recreational facilities and improvement of fish and wildlife habitat; (b) making loans to local organizations to help finance the local share of the costs of carrying out planned watershed works of improvement; and (c) cooperating with other Federal, State, and local public agencies in making investigations and surveys of the watersheds of rivers and other waterways for the development of coordinated water resources programs.

Flood Prevention Program Activities. The Service has general responsibility for administration of the Flood Prevention program including the development of the guiding principles and procedures. The activities conducted in the 11 authorized watersheds, include (a) planning and installing works of improvement for flood prevention and for the conservation, development, utilization,

and disposal of water, including the development of recreational facilities and improvement of fish and wildlife habitat; and (b) making loans to local organizations to help finance the local share of the cost of carrying out planned watershed works of improvement.

Great Plains Conservation Program Activities. The Service has general responsibility for administration of the Great Plains Conservation Program, authorized by P.L. 1021, 84th Congress. The activities include (a) cost-sharing of conservation practice installation under long-term contracts with farmers and ranchers in designated counties of the ten Great Plains States; and (b) technical services required to make needed land use adjustments and install essential soil and water conservation measures specified in basic conservation plans in accordance with contract schedules. This program assistance is to protect the lands from erosion and establish farming and ranching practices which mitigate the effects of the climatic hazards that characterize the area and thus aid in achieving more stable agricultural operations.

Resource Conservation and Development Program Activities. The Service has general responsibility, under the provisions of Section 102, Title I of the Food and Agriculture Act of 1962, for leadership and direction of this program. The activities include; (a) investigations and surveys to help local sponsors develop overall programs and plans of land conservation and utilization; (b) technical services and financial assistance to sponsors, local groups and individuals in carrying out such plans and programs, (c) loans for resource improvements and developments on private lands in approved projects; and (d) dissemination of information concerning the benefits, opportunities, and results of these activities. The Service coordinates this work with the work in other agencies of the Department and with the regular programs of conservation districts.

Program Administration. The Service maintains its central office in Washington. Most of its activities are decentralized in 50 States and Puerto Rico, five cartographic units, four engineering and watershed planning units, and four technical service centers. Specialists in the fields of agronomy, soils, biology, forestry, information, plant materials, and range conservation are located at the four technical service centers in the field to provide necessary services, program coordination, and technical assistance. About 3,200 area and work unit headquarters carry on the technical programs in the field in cooperation with conservation districts and other local sponsoring organizations.

Appropriations and Man-Years
1965 and Estimated, 1966 and 1967

Item	Actual		Estimated		Budget Estimate	
	1965		Available, 1966		1967	
	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
Soil Conservation						
Service:						
Conservation operations	\$105,807,555	10,838	\$108,802,000	11,686	\$109,020,000	11,300
Watershed planning ..	6,320,615	492	5,853,000	642	6,397,000	598
Watershed protection ..	71,239,690	2,487	66,331,000	2,654	66,559,000	2,720
Flood prevention ...	26,317,103	1,346	25,571,000	1,342	25,654,000	1,291
Great plains conservation program	14,863,803	368	16,082,000	403	16,112,000	404
Resource conservation and development ...	1,813,000	91	4,347,000	194	4,574,000	263
Total	226,361,766	15,622	226,986,000	16,921	228,316,000	16,576
Deduct allotments to other agencies	-14,896,918	-611	-16,639,841	-676	-13,929,500	-721
Net	211,464,848	15,011	210,346,159	16,245	214,386,500	15,855
Obligations under other USDA appropriations:						
Reimbursement from Agricultural Stabilization and Conservation Service for:						
Technical assistance under:						
Agricultural conservation program	8,037,133	1,114	8,500,000	1,164	5,000,000	654
Cropland Adjustment program	- -	- -	150,000	17	200,000	22
Cropland Conservation program	30,175	3	50,000	5	50,000	5
Reimbursements from other USDA agencies for miscellaneous services...	1,120,972	107	927,000	120	995,000	101
Total, other USDA appropriations ..	9,188,280	1,224	9,627,000	1,306	6,245,000	782
Total, Agricultural Appropriation Bill ..	220,653,128	16,235	219,973,159	17,551	220,631,500	16,637

(Continued on next page)

Item	Actual 1965		Estimated Available, 1966		Budget Estimate 1967	
	Amount	Man- Years	Amount	Man- Years	Amount	Man- Years
Other Funds:						
From Federal sources:						
Area Redevelopment						
Administration,						
Department of Com-						
merce - Operations	25,957:	1:	- -	- -	- -	- -
Agency for Interna-						
tional Development:						
Training of foreign:						
participants	86,921:	9:	97,300:	10:	98,100:	10
Technical consulta-						
tion	13,985:	1:	18,400:	1:	18,600:	1
Special projects .	335,725:	18:	634,400:	32:	657,600:	35
Total, Agency for						
International						
Development	436,631:	28:	750,100:	43:	774,300:	46
Reimbursements for						
miscellaneous tech-						
nical services	894,213:	64:	1,559,000:	78:	1,755,000:	115
From non-Federal						
sources:						
Reimbursements for:						
Cartographic						
services	36,250:	4:	37,000:	4:	48,000:	6
Sale of personal						
property	655,515:		616,000:		660,000:	
Soil survey accel-						
eration	344,583:	38:	568,000:	55:	700,000:	72
Watershed planning						
assistance	933,197:	91:	1,226,000:	131:	1,300,000:	139
Other miscellaneous:						
technical services:	216,142:	16:	204,000:	16:	250,000:	19
Funds received from:						
State and local						
organizations pri-						
marily for water-						
shed planning as-						
sistance but in-						
cluding amounts for:						
works of improve-						
ment in watershed						
projects, for plant:						
material center op-						
eration, and for						
miscellaneous tech-						
nical services ...	724,189:	76:	873,000:	95:	950,000:	102
Total, Other Funds:	4,266,677:	318:	5,833,100:	422:	6,437,300:	499
Total, Soil Conserva-						
tion Service	224,919,805:	16,553:	225,806,259:	17,973:	227,068,800:	17,136

(a) Conservation Operations

Appropriation Act, 1966	\$106,373,000
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental	-179,000
Proposed supplemental, 1966, for increased pay costs	2,608,000
Base for 1967	108,802,000
Budget Estimate, 1967	109,020,000
Increase	<u>+218,000</u>

SUMMARY OF INCREASES AND DECREASES

	1966 <u>Appropriation</u>	<u>Increase or Decrease</u>		1967 <u>Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
For staffing 18 new conser- vation districts	- -	- -	+\$515,000	\$515,000
To assist with income-pro- ducing recreation	- -	- -	+1,028,000	1,028,000
To continue accelerated oper- ations in Appalachian Region	- -	- -	+1,417,000	1,417,000
To operate new plant materials center	- -	- -	+51,000	51,000
Decrease in soil survey operations	\$19,380,000	+\$150,000	-3,600,000	15,930,000
All other	89,422,000	+657,000	- -	90,079,000
Total	<u>108,802,000</u>	<u>+807,000</u>	<u>-589,000</u>	<u>109,020,000</u>

PROJECT STATEMENT

Project	1965 (adjusted)	1966 (estimated)	<u>Increases and Decreases</u>		1967 (estimated)
			<u>Increased</u> Pay Costs (P.L. 89-301)	<u>Other</u>	
1. Assistance to conservation districts, com- munities, and other coopera- tors:					
a. Soil surveys ..	\$19,095,601	\$19,380,000	+\$150,000	-\$3,600,000(1)	\$15,930,000
b. Technical pro- gramming and in- stallation ser- vices	83,810,778	87,878,000	+645,000	+2,960,000(2)	91,483,000
c. Snow surveys ..	591,855	584,000	+3,000	- -	587,000
d. Operation of plant material centers	1,241,491	960,000	+9,000	+51,000(3)	1,020,000
Unobligated balance	1,067,830	- -	- -	- -	- -

(Continued on next page)

Project	1965 (adjusted)	1966 (estimated)	Increases and Decreases		1967 (estimated)
			Increased Pay Costs (P.L. 89-301)	Other	
Total increased					
pay costs (P.L. 89-301)	- -	(2,677,000)	(+819,000)	(-14,000)	(3,482,000)
Total available	a/				
or estimate ...	105,807,555	108,802,000	+807,000 (4)	-589,000	109,020,000

a/ The 1965 amount includes the supplemental appropriation of \$1,575,000 made in 1965 for the Appalachian program. All of this amount is being obligated in 1966.

INCREASES AND DECREASES

(1) A reduction of \$3,600,000 in soil surveys.

As a result of a review of programs and activities which might be reduced to meet higher priority needs, the 1967 budget proposes a reduction of \$3,600,000 in the appropriation for soil surveys. After this reduction, a total of \$15,930,000 would remain for this activity. Soil surveys needed for planning and technical assistance to conservation district cooperators would continue to be provided but at a reduced annual rate. Assuming some increase in the present rate of support from other Federal, State and local agencies, the amount requested will provide for field mapping and publication of soil surveys at a rate of about 35 million acres each year.

(2) An increase of \$2,960,000 for technical programming and installation services, composed of the following items:

(a) Technical assistance to newly organized conservation districts -- \$515,000. This increase is to provide staff needed for assignment to help the 18 additional conservation districts expected to be organized in 1967. The needed technical staffing in the new district of 54 man years cannot be provided with funds currently available except by curtailment of assistance to existing districts. This would be unadvisable because workload studies show that they already are short of needed help. The new districts organized by local land-owners and operators to solve their soil and water conservation and land-use problems need the technical help of the Department. Such help is needed in their first year of operation when they are initiating their local programs and are anxious to get cooperators working on the problems which the districts were organized to help solve. Successful local conservation and land-use planning and related field operations are dependent upon the availability to conservation districts of competent technical staff. It is urgent that needed technical assistance be provided on a timely basis.

(b) On-site assistance with income-producing recreation facilities -- \$1,028,000. The Food and Agriculture Act of 1962 (P.L. 87-703) recognized recreation as an agricultural use of rural lands, however, no funds have yet been appropriated for technical help with this type of work. There is an increasing demand and need for such assistance on private land. The programs

of some soil and water conservation districts have been adjusted to partly fill the continuing local needs for recreational facilities and to improve natural beauty. The heaviest workloads in this activity are in about 100 conservation districts near large centers of urban population. The increase of \$1,028,000 is needed to employ about 120 skilled technical specialists to help cooperating farmers and ranchers plan, design, and install the desired facilities for public use. About 18,000 cooperating land owners and operators are estimated to need such help in the 1967 fiscal year. The work would provide many more rural and urban people with out-door recreation opportunities and would improve the local use of natural resources. It would increase the income-producing opportunities of the farm families involved and reduce the distance people must travel who seek suitable local recreational facilities.

(c) For continuing the added technical help needed by cooperators in the Appalachian Region -- \$1,417,000. This increase is necessary to continue accelerated operations in Appalachia for improved land utilization, conservation, and erosion control at the same level as provided in 1966. Following passage of the Appalachian Regional Development Act of 1965, a supplemental appropriation provided \$1,375,000 of conservation operations funds for accelerating technical services in Appalachia. The total of \$1,417,000 needed for continuing the accelerated operations in Appalachia for 1967 includes \$42,000 for pay act costs. The increase requested would continue the approximate 190 man-years of assistance being provided on the work in 1966. Landowners and operators want and need help with preparation of conservation and development plans and installation of planned measures. Assistance is needed locally with community-type planning activities to accomplish necessary rural improvements.

(3) An increase of \$51,000 for continuing operation of a new plant materials center in Appalachia:

This increase is necessary to enable continuing operation in 1967 of the plant materials center being established in 1966 at Quicksand, Kentucky to serve the Southern Appalachian Region. This center is being established and necessary facilities constructed with \$200,000 made available for this purpose in a supplemental appropriation in 1965. The construction will be on land donated by the State. The increase of \$51,000 is the amount needed in 1967 for operation of the center at Quicksand. It provides for 5 man-years of personnel.

It is urgent that this newly established plant materials center be continued in operation in 1967. Its facilities are needed for production and field testing of seed and plants adapted to use for soil and water conservation purposes in the Appalachian Region. It is particularly important due to accelerated conservation, beautification, and resource development work in this area.

(4) An increase of \$807,000 to provide for the full year costs in fiscal year 1967 of pay increase pursuant to P.L. 89-301. (An over-all explanation of increase for pay act costs is included in the Preface of these Explanatory Notes in Volume 1.)

The following tabulation reflects obligations under this appropriation, after taking into consideration the carryover into 1966 of 1965 unobligated balances:

PROJECT STATEMENT
(On the basis of available funds)

Project	1965 obligations	1966 (estimated)	Increase or Decrease	1967 (estimated)
1. Assistance to conservation districts, communities, and other cooperators:				
a. Soil surveys	\$19,095,601	\$19,380,000	-\$3,450,000	\$15,930,000
b. Technical programming and installation services	82,435,778	89,253,000a/	+2,230,000	91,483,000
c. Snow surveys	591,855	584,000	+3,000	587,000
d. Operation of plant material centers	1,041,491	1,160,000b/	-140,000	1,020,000
Total increased pay cost (P.L. 89-301)	- -	(2,677,000)	(+805,000)	(3,482,000)
Total obligations	103,164,725	110,377,000	-1,357,000	109,020,000
Unobligated balance lapsing ...	1,067,830	- -	- -	- -
Unobligated balance start of year	- -	-1,575,000	+1,575,000	- -
Unobligated balance end of year	1,575,000	- -	- -	- -
Total available or estimate ...	105,807,555	108,802,000	+218,000	109,020,000

a/ Includes \$1,375,000 available from a 1965 supplemental appropriation to accelerate conservation operations in the Appalachian Region.

b/ Includes \$200,000 available from a 1965 supplemental for establishment of a plant materials center to serve the Appalachian Region.

STATUS OF PROGRAM

Current Activities: The Act of April 27, 1935, (16 U.S.C. 590a - 590f), in recognition of the wastage of soil and moisture resources on farm, ranch, and forest lands of the Nation, resulting from soil erosion and damages caused thereby, authorized a program of measures to be carried out to prevent it. The Soil Conservation Service was established as the technical agency of the United States Department of Agriculture to carry out provisions of the Act. It is charged with the responsibility of providing professional leadership, technical guidance and installation services to landowners and operators of the country in matters of soil, water, and plant conservation. The basic objectives of this program include use of land within its capability and applied treatments in accordance with the needs.

Work is Cooperative With Local Conservation Districts

The work of the Soil Conservation Service is carried on primarily in cooperation with conservation districts, which are local units of government formed under authority of State laws. They are operated upon the principles of local initiative, direction, and control. Local people provide the stimulus and leadership needed to effectively advance the program objectives of each district.

Each conservation district develops its own conservation program based on the needs of the land and desires of local people. Such programs vary according to the soil conditions, water supply, plant growth, and their long-term objectives to improve the economic situation in the district. Every district has a local governing body to manage its affairs and provide program leadership. These local boards of supervisors, directors, or commissioners are appointed or elected by the landowners within each district, and serve without pay.

Districts may obtain technical and other assistance from the Department under the provisions of a memorandum of understanding. Soil conservationists and other technicians of the Service are assigned to local work units which serve the soil and water conservation districts. They work directly with landowners and operators in helping them develop practical conservation plans for individual farms, ranches, or other operating units. These plans are based on land classifications developed through soil surveys, and provide for the use and treatment of land within its capability. Such plans also provide an orderly basis for the application of needed combinations of practices to conserve land and water resources. Thus the practical experiences of farm and ranch operators is combined with the scientific knowledge and skills of professional conservationists in developing and carrying out locally-adapted conservation programs.

Types of SCS Assistance Furnished

Professional services and other technical assistance being furnished to conservation districts, rural communities, and the public generally under this appropriation consist of the following:

1. The making of soil surveys and special investigations to determine soil-site conditions, use capabilities of the land, and its conservation needs. Such surveys are conducted cooperatively with other Federal agencies, the Land Grant Colleges, other State agencies, and cooperating local organizations. The published soil survey report and maps for a county or designated area also provide information used in other Federal, State, county and local community programs.
2. On-site assistance to cooperating landowners and operators, in planning and installing conservation practices on the land of district cooperators, as follows:
 - a. Planning assistance to farmers, ranchers, and other landowners and operators who need technical help in determining the treatment needs and alternative uses of their lands to achieve desired conservation objectives. The basic conservation plans that are developed for each farm or ranch include soil and capability map, a land-use map, combinations of practices planned for each designated field and the cooperator's recorded decisions on the use and treatment of the land.
 - b. Installation services to help cooperating landowners and operators apply planned conservation programs to their lands. This technical help includes site investigations, designs and specifications, construction plans and layout, and on-site guidance with practice installations.
 - c. Technical help with community-type group jobs where soil erosion and water control problems can best be solved by group action. This type of assistance involves planning for efficient use or disposal of water, stabilization of critical areas, reduction of stream pollution, and the prevention of flood and sediment damages. Farmers and ranchers who participate in such group enterprises usually finance the cost of installing control measures on their land, except for amounts of cost-shares paid through pooling agreements under the Agricultural Conservation Program.
 - d. Consultative assistance on conservation and land use problems to individuals, rural communities, and other organizations such as State Agricultural Experiment Stations, State Highway Departments, City and County Planning or Zoning Boards, School Boards, and Tax Commissions. Such assistance includes the furnishing of soils interpretations, information on erosion and floodwater problems, with recommendations on needed changes in land use and special conservation problems.

- e. Technical services to participants in the Agricultural Conservation Program for site selection, layout or establishment of specified conservation practices, and certification of practice performance. About 50 percent of the total cost of these technical services is reimbursed to the Service from program funds allocated to the respective County Agricultural Stabilization and Conservation Committees.
3. Water supply forecasts developed from snow surveys in the Western States to serve as a basis for temporary storage, distribution, and seasonal use of available water for irrigation and other purposes. This information is supplied to public agencies, individuals and groups for their guidance as to future water supplies.
4. Operation of plant material centers for selection and testing of plants to determine their suitability for erosion control, special conservation purposes, and adaptation to unusual soil conditions. This includes cooperation with commercial concerns and seed associations to encourage production, release, and use of new or uncommon vegetative materials needed in soil and water conservation work.

Rural Areas Development

The Service has geared its program operations to make the maximum contribution to the Department's Rural Areas Development effort. Protection and development of the land and water resources for economic improvements are being emphasized. Technical consultation is provided on request to State and County Rural Areas Development Committees and to other interested agencies. Assistance is given to private groups and organizations on proposed works of improvement for water control and storage, improvement of public facilities, location of industries in rural areas, and other economic developments. This assistance includes the furnishing of soil survey maps, technical interpretations of soil conditions, land capability information, and similar land facts with appropriate technical recommendations.

Status of District Organization - 6/30/65

A total of 36 new conservation districts were formed in the 1965 fiscal year of which 18 were in areas not previously covered by districts. Consolidations and changes in boundaries of 18 other districts resulted in the transfer of over 12 million acres between districts, and over 4.5 million acres were added to 72 existing districts. The net increase of new territories brought into districts in 1965 was 14,073,002 acres. Nearly 95 percent of the total farm and ranch lands and 98 percent of the farms and ranches in the Nation are now within the boundaries of organized soil and water conservation districts. The following table shows the classification, number, and area of districts and number of farms as of June 30, 1965:

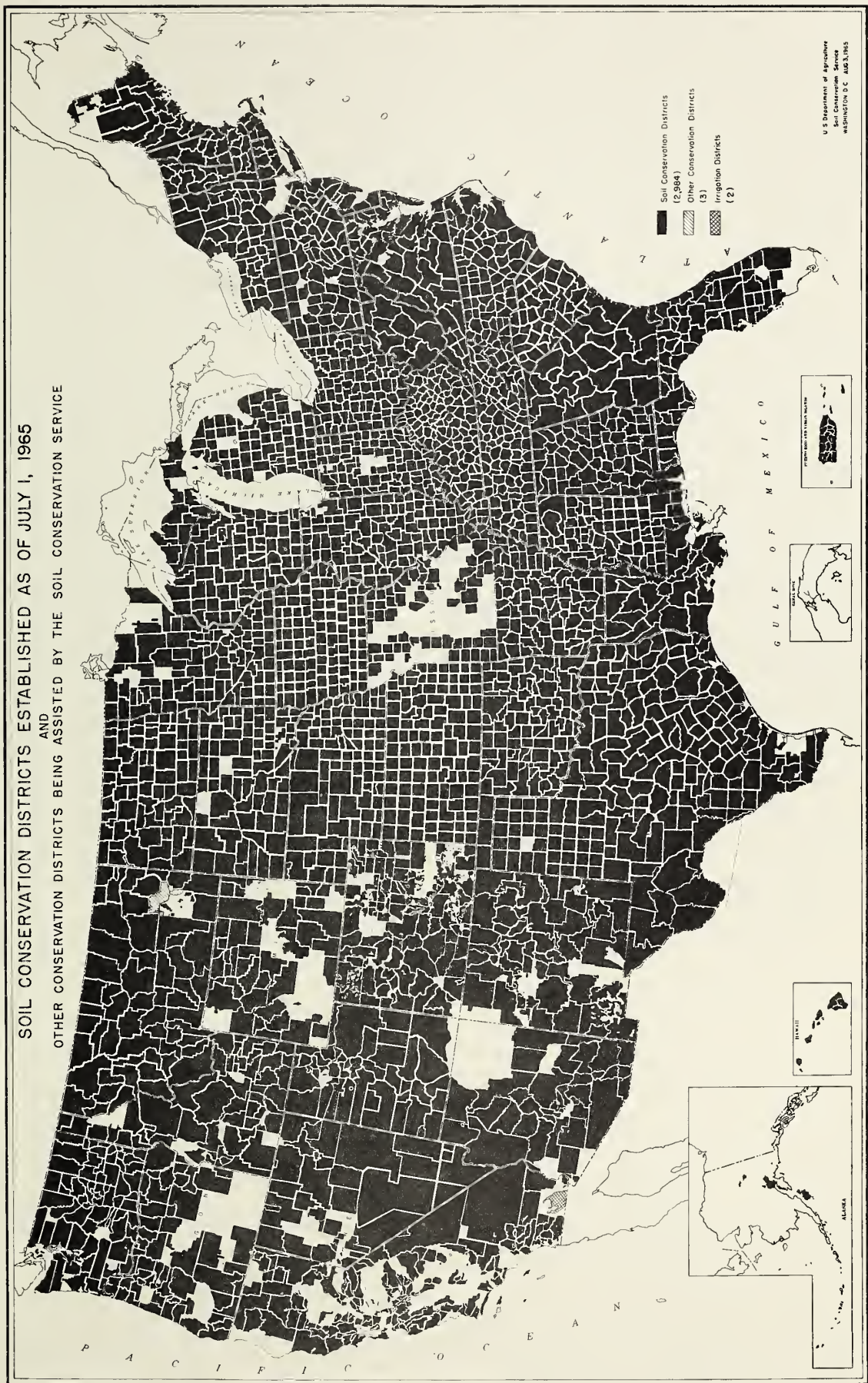
Kind of district	State	Dis- tricts:	Approximate Area	Farms
	48	No.	Acres	No.
Soil Conservation Districts	States	2,946	1,736,947,961	3,625,443
	Caribbean:			
Soil Conservation Districts	Area	18	2,269,711	54,270
	Alaska	12	8,504,540	1,285
Sub-districts	Conn.	8	3,135,360	8,292
Work Areas (called districts)	Mont.	3	1,388,071	292
Grass Conservation Districts	Calif.	1	908,195	6,129
Imperial Irrigation District	N. Mex.	1	127,000	196
Elephant Butte Irrig. District				
Total Conservation Districts		2,989	1,753,280,838	3,695,912

As of July 1, 1965, all lands of twenty-five States, Puerto Rico, and the Virgin Islands were within districts, as follows:

Name of State	Date Covered	Name of State	Date Covered
1. Alabama	4-24-41	16. Arkansas	6-2-55
2. South Carolina	5-7-43	17. Wisconsin	11-6-56
3. Delaware	8-9-44	18. Georgia	7-2-57
4. Rhode Island	1-4-45	19. Maryland	4-30-58
5. New Hampshire	4-26-46	20. Tennessee	9-9-59
6. Vermont	6-4-47	21. West Virginia	1-5-60
7. New Jersey	2-26-48	22. Utah	4-6-60
8. Massachusetts	5-24-49	23. Oklahoma	1-17-61
9. Nebraska	3-2-50	24. North Dakota	1-31-62
10. Mississippi	11-9-50	25. Ohio	5-7-62
11. Iowa	2-1-52		
12. Connecticut	7-8-53	<u>Name of Territory</u>	
13. Kansas	3-22-54	1. Virgin Islands	6-29-46
14. Kentucky	4-5-54	2. Puerto Rico	2-10-47
15. North Carolina	3-1-55		

In addition, all lands of Illinois, Texas and Virginia are essentially within districts. The following map shows the coverage of districts as of July 1, 1965:

SOIL CONSERVATION DISTRICTS ESTABLISHED AS OF JULY 1, 1965
AND
OTHER CONSERVATION DISTRICTS BEING ASSISTED BY THE SOIL CONSERVATION SERVICE



Projected District Organization

A total of 25 new soil and water conservation districts are expected to be organized in the 1966 fiscal year. Another 18 districts are projected for 1967. The formation of districts is nearing completion in most States. About 80 more districts are expected to be organized within the next few years. The following table shows the current projections with estimated number of farms and acreage included:

Date	:Number of: Acreage in Districts : Number			
	:Districts:	Total Area	:Land in Farms:	of Farms
<u>Actual</u>	:	:	:	:
June 30, 1964	: 2,971	:1,739,207,836	:1,059,553,396	:3,678,755
Average per SCD	: - -	: 585,395	: 356,632	: 1,238
	:	:	:	:
June 30, 1965	: 2,989	:1,753,280,838	:1,065,945,137	:3,695,912
Average per SCD	: - -	: 586,578	: 356,623	: 1,237
	:	:	:	:
<u>Estimate</u>	:	:	:	:
June 30, 1966	: 3,014	:1,770,000,000	:1,076,000,000	:3,722,000
Average per SCD	: - -	: 587,260	: 357,000	: 1,235
	:	:	:	:
June 30, 1967	: 3,032	:1,783,000,000	:1,086,000,000	:3,735,400
Average per SCD	: - -	: 588,060	: 358,180	: 1,232
	:	:	:	:

The number of farms shown is based largely on the 1959 Census of Agriculture, adjusted slightly to reflect continued reductions in total numbers of farms in the United States. The average size of farms in districts as of June 30, 1965, was 288.4 acres. Trends in recent years have been to larger farms and to more specialization. This has resulted in many land use adjustments in plans made some years ago and changes in conservation plans previously made. Many other changes and subdivisions of private properties are expected in the period just ahead. The average size of plans prepared is expected to increase.

Cost and Staffing Comparisons

While funds and the number of districts continue to increase, the total man-years and average available per district have declined each year since 1960. This is due mainly to increased personnel compensation resulting from Federal pay legislation, and rising costs of operations. The following tables show for Conservation Operations funds the assistance available to districts in recent years and comparison of costs:

<u>Fiscal Year</u>	<u>No. of Districts</u>	<u>Total Obligations</u>	<u>Total Man-Years</u>	<u>Man-Years per District</u>	<u>Cost Per Man-Year</u>
1960	2,867	\$81,323,566	11,352	3.95	\$7,164
1962	2,929	88,906,267	11,070	3.78	8,031
1965	2,989	103,164,725	10,838	3.63	9,519

<u>Items of expense</u>	<u>: Actual Obligations</u>		
	<u>: 1964</u>	<u>: 1965</u>	<u>: Change</u>
Personnel compensation	\$7,124	\$7,588	+\$464
Personnel benefits, travel and transportation	794	844	+50
Rent, communications, utilities, and printing	307	336	+29
Other services and payments	170	206	+36
Supplies, materials and equipment	472	528	+56
Miscellaneous items	6	17	+10
Cost per man year	8,873	9,519	+645

Purpose and Use of Soil Surveys

Soil surveys are conducted in cooperation with other Federal agencies, the State agricultural experiment stations, other State agencies, county governments, conservation districts, and other local organizations. The major objective of the National Cooperative Soil Survey is to provide published soil surveys for general use by all interested agencies, and organizations and individuals. Information provided by soil surveys is needed in land-use planning, treatment needs, adapted crops and other purposes.

Facts from soil surveys are made available by SCS to landowners and operators cooperating with districts for use in developing basic conservation plans for farms, ranches, or other land areas. The soil survey is a detailed physical inventory of the soil. It shows depth, texture, structure, drainage, stoniness, slope, erosion, and other land features that are helpful in classifying its use and capability. The soil survey of a county may show 75 to 200 kinds of soil, each of which are named and defined in the national system. The boundaries of each kind of soil are drawn on a base map, usually an aerial photograph. With a soil map and its interpretation, plus related information, the planning technician is able to help farmers, ranchers, and other landowners develop sound long-term conservation plans for their land.

Many adjustments are being made in the use and development of land resources. While soils best suited to farming continue as cropland, less productive soils are being shifted to grass, trees, and other productive uses. Soil surveys provide the information in making land use

adjustment, including indications of treatment needs and conversion of cropland to other uses. By using soil maps, results from research, and experience on a particular kind of soil, the information can be applied with confidence to other areas having similar soil conditions.

Although soil surveys are being used mainly in the development and management of farm and forest lands, they provide valuable information for many other purposes. County and community planning officials use soil survey information to help locate areas that are suitable for housing, schools, shopping centers, roads, parking lots, industry, parks, and recreational areas. Bankers, insurance officials, and loan companies find soil surveys helpful in determining the soundness of proposed investments in land. Engineers use soil surveys in the location and design of highways, airports, sewers, pipelines, buildings and other structures.

Progress in Soil Mapping

As of June 30, 1965, detailed soil maps and descriptions had been prepared for a total of 862,118,407 acres, or about 38 percent of the land in the United States for which detailed soil surveys are needed. The acreage mapped in recent years is shown in the following table.

<u>Fiscal Year</u>	<u>Conservation Operations</u>	<u>Other SCS Programs</u>	<u>Other Cooperators</u> 1/	<u>Total Acres Mapped</u>
1965 Actual	52,897,072	2,080,469	2,279,193	57,256,734
1966 Estimate	52,000,000	2,000,000	3,000,000	57,000,000
1967 Estimate	35,000,000	2,000,000	3,500,000	40,500,000

1/ Includes soil surveys made or financed by other Federal agencies, State agricultural experiment stations, and other State and local agencies or organizations.

Progress in Soil Survey Publication

A total of 37 soil survey reports with accompanying maps were edited and submitted to the Government Printing Office during fiscal year 1965 for publication. Soil Surveys of the following 39 counties or other areas were published and distributed during the 1965 fiscal year:

Baldwin County, Alabama	Logan County, Kansas
Franklin County, Alabama	Clark County, Kentucky
Eastern Stanislaus Area, California	Elliott County, Kentucky
Suwannee County, Florida	Fulton County, Kentucky
Meriwether County, Georgia	Eastern Kentucky Reconnaissance
Spalding County, Georgia	(14 counties)
Walton County, Georgia	Caroline County, Maryland
Wayne County, Georgia	Aroostook County, Maine (Southern)
Owen County, Indiana	Crow Wing County, Minnesota

Covington County, Mississippi
Warren County, Mississippi
Daviess County, Missouri
Moniteau County, Missouri
Gage County, Nebraska
Saunders County, Nebraska
Washington County, Nebraska
Iredell County, North Carolina
Ottawa County, Oklahoma
Stephens County, Oklahoma
Sherman County, Oregon

Tillamook County, Oregon
Jefferson County, Pennsylvania
Lajas Valley Area, Puerto Rico
York County, South Carolina
Minnehaha County, South Dakota
Fayette County, Tennessee
Williamson County, Tennessee
Armstrong County, Texas
Ellis County, Texas
Foard County, Texas
Monroe County, Texas

At the close of the 1965 fiscal year, 49 soil surveys were in the Government Printing Office awaiting publication. It is expected that about 42 edited soil surveys will be submitted for publication during the fiscal year 1966 and about 45 others during the fiscal year 1967.

Becoming a Conservationist

Each conservation plan on private land provides for profitable uses of the available soil, water, and plant resources, as well as their protection and improvement. Each plan is also coordinated for an entire unit to the satisfaction of those who own and operate the land. A modern plan of operation for a farm or ranch reflects professional knowledge of planning technicians blended with the practical experience and desires of each cooperating landowner. The planning process by which this pooling of knowledge, experience, and exchange of information takes place is as follows:

1. Appraisal of the soil, water and plant resources.
2. Identification of the land use and treatment problems.
3. Development of alternative uses and combinations of practices.
4. Evaluation of probable effects on operations and income.
5. Decisions by the cooperator on uses and treatment of his land.
6. A written plan of operations which shows the future uses and planned conservation treatments for the entire unit.

This technical planning process, when used successfully, results in an understanding of the opportunities and limitations of conservation farming. The cooperator knows how to use and treat each kind of land within its capabilities. Individual operators can and will become conservation farmers when technically-sound program alternatives are supported by adequate cost-return information.

Conservation Planning Assistance

Most soil and water conservation work is conducted in cooperation with farmers and ranchers. Consultative assistance is also provided to individuals, local groups, and organizations on land use conversions and water control problems. Planning services usually include the following:

Program Development: The Service helps conservation districts, other local groups, and agencies to develop their programs in accordance with the needs of the land and desires of local people. This includes the furnishing of soil survey information, appraisal of needed land use changes, treatment recommendations, and alternative adjustments that stimulate economic improvements. Standards and specifications are also provided for those practices and measures which apply locally. Each conservation district is usually supplied with a technical guide which includes the criteria and limitations for all practices and measures used in the local program.

Farm and Ranch Planning: When a landowner or operator wants technical help, he contacts his local district official. At first, he may be concerned about a single field, a particular practice, adjustments in crop acreage, or some land use problem on his own property. He can become a district cooperator by signing a long-term cooperative agreement. A start then may be made in progressively developing a basic conservation plan for all of his land. Such plans may be prepared in a few weeks, or over a period of several years, to reflect those crop adjustments, land conversions, and conservation treatments needed on the particular farm or ranch. Each basic plan developed by the cooperator with SCS technical help includes a land capability map, a land use map (usually an aerial photograph), and appropriate schedules for the installation of planned practices.

In the planning process future land uses and type of management for each farm or ranch must be decided before combinations of treatments can be designed to protect and improve it. Each change in use or treatment is considered in terms of invested capital, labor, equipment and the opportunities for the operator to realize his goals. Technical assistance is essential to such basic determinations. The cooperator may use many sources of financial help such as FHA loans, ACP cost-sharing, long-term contracts or agreements to supplement his own investments, as further explained herein.

Plan revisions: The cooperative agreement between farmers and the local districts may be changed or revised frequently as they learn more about soil and water conservation. The goals for an individual farm or ranch, as stated in the basic conservation plan, may be altered as the work progresses. Changes in ownership, consolidation of farms, adjustments in land use, and specialized types of farming have increased the needs for revising many basic plans previously made.

Status of Conservation Planning Activity

The following table shows district cooperators and progress in farm and ranch conservation planning with SCS technical assistance:

Item	Current Year a/		Net	Cumulative in
	Increase	Decrease	Change	SCD's June 30 b/
	Fiscal Year 1965 (Actual)			
Number of district cooperators	106,041	-62,807	+43,234	2,041,182
Number of basic conservation plans:				
Developed	97,066	-41,906	+55,160	1,570,822
Revised	36,270	- -	- -	- -
	Fiscal Year 1966 (Estimate)			
Number of district cooperators	110,000	-69,165	+40,835	2,080,000
Number of basic conservation plans:				
Developed	100,000	-49,673	+50,327	1,620,000
Revised	35,000	- -	- -	- -

a/ Figures are for the Conservation Operations program only. In addition a total of 7,944 conservation plans and 3,048 revisions of plans were prepared in 1965 under other programs administered by the Soil Conservation Service.

b/ Totals in districts under all current programs.

As of June 30, 1965, about 34 percent of the operating units in conservation districts had been planned with technical assistance from the Soil Conservation Service under all programs which it administers. The 1,570,822 basic conservation plans as of June 30, 1965, comprise nearly 500 million acres, or 38 percent of the total agricultural land in the United States. The following table shows the percentages by States:

Basic Conservation Planning in Soil Conservation Districts
By States and Nationally, June 30, 1965

States	Total SCD's as of 6/30/65		Operating Units in SCD's		Basic Conservation Plans Prepared as of 6/30/65		% of Operating Units Planned	
	Number		Number	Acres	Number	Acres	%	%
Northeast								
Connecticut	8		35,950	2,434,400	3,278	344,940	9.1	14.2
Delaware	3		8,313	1,143,581	2,160	321,151	26.0	28.1
Kentucky	121		186,232	22,402,419	51,419	6,177,331	27.6	27.6
Maine	16		79,283	16,931,146	7,471	1,542,612	9.4	9.1
Maryland	24		38,616	5,699,490	11,347	1,677,694	29.4	29.4
Massachusetts	15		30,701	3,843,472	8,213	813,800	26.8	21.2
New Hampshire	10		27,428	4,834,450	5,307	864,032	19.3	17.9
New Jersey	14		28,945	3,990,638	5,738	629,678	19.8	15.8
New York	52		124,377	18,731,582	26,532	3,838,587	21.3	20.5
Ohio	88		166,285	21,282,773	50,219	6,691,394	30.2	31.4
Pennsylvania	62		131,390	17,917,196	26,635	3,503,387	20.3	19.6
Rhode Island	3		5,850	507,700	1,136	131,710	19.4	25.9
Vermont	13		35,861	4,531,219	6,477	1,355,502	18.1	29.9
Virginia	31		128,978	19,619,899	34,811	5,586,368	27.0	28.5
West Virginia	14		71,968	13,136,113	30,557	4,317,805	42.4	32.9
Total	174		1,100,177	157,006,078	271,300	37,795,991	24.6	24.1
South								
Alabama	66		111,138	20,469,529	46,054	8,520,236	41.4	41.6
Arkansas	76		131,225	30,165,591	79,264	16,172,306	60.4	53.6
Florida	60		57,186	25,139,535	21,501	7,387,748	37.6	29.4
Georgia	27		163,228	32,504,350	90,026	16,689,497	55.2	51.3
Louisiana	26		92,465	24,010,163	37,916	8,174,863	41.0	34.0
Mississippi	74		145,905	25,292,680	58,908	11,035,964	40.4	43.6
North Carolina	88		239,648	22,270,791	63,248	6,756,143	26.4	30.3
Oklahoma	87		137,211	39,721,313	92,609	26,389,302	67.5	66.4
South Carolina	45		111,106	17,537,002	36,432	5,930,777	32.8	33.8
Tennessee	95		176,271	20,736,868	38,482	5,373,615	21.8	25.9
Texas	183		314,262	157,579,888	167,324	94,314,788	53.2	59.8
Caribbean	18		48,983	1,932,952	15,357	879,473	31.4	45.5
Total	845		1,728,658	417,360,662	747,121	207,624,712	43.2	49.7
Mid-West								
Illinois	98		174,781	30,671,030	45,407	7,760,492	26.0	25.3
Indiana	87		128,933	18,421,482	27,400	3,991,878	21.2	21.7
Iowa	100		174,924	33,848,923	59,103	10,876,301	33.8	32.1
Kansas	105		141,914	49,307,763	74,182	23,802,522	52.3	48.3
Michigan	81		169,664	26,545,363	32,193	4,286,737	19.0	16.1
Minnesota	89		144,356	32,710,574	30,542	6,406,375	21.2	19.6
Missouri	65		105,121	20,398,306	19,066	3,789,089	18.1	18.6
Nebraska	86		103,835	47,537,358	47,353	19,172,496	45.6	40.3
North Dakota	70		56,613	42,623,689	28,169	20,591,524	49.8	48.3
South Dakota	69		56,615	43,709,990	26,319	17,049,186	46.5	39.0
Wisconsin	72		121,051	21,027,007	32,509	5,536,798	26.8	26.3
Total	922		1,377,807	366,801,485	422,243	123,263,398	30.6	33.6
West								
Alaska	12		2,166	1,055,638	314	47,685	14.5	4.5
Arizona	37		8,242	26,696,087	3,536	6,592,575	42.9	24.7
California	164		102,638	35,064,045	31,458	9,110,723	30.6	26.0
Colorado	94		36,403	41,362,178	13,845	16,513,577	38.0	39.9
Hawaii	15		4,112	3,584,209	1,144	1,455,048	27.8	40.6
Idaho	54		37,298	16,063,870	10,583	5,042,422	28.4	31.4
Montana	62		27,434	59,729,777	10,066	25,926,306	36.7	43.4
Nevada	36		3,767	25,379,246	1,692	1,412,274	44.9	5.6
New Mexico	56		20,493	58,013,487	10,783	32,433,358	52.6	55.9
Oregon	61		48,867	25,398,502	11,087	6,298,510	22.7	24.8
Utah	43		21,539	16,569,536	10,242	5,997,250	47.6	36.2
Washington	69		73,028	20,697,435	20,773	7,175,464	28.4	34.7
Wyoming	45		9,347	26,105,737	4,635	10,652,285	49.6	40.8
Total	748		395,334	355,719,747	130,158	128,657,477	32.9	36.2
National Total	2,989		4,601,976	1,296,887,972	1,570,822	497,341,578	34.1	38.3

Practice Installation Services

The Soil Conservation Service furnishes technical assistance to cooperating farmers and ranchers to help apply planned conservation measures to the land. This includes detail designs, layout, technical supervision, and follow-up for maintenance of applied practices. More than a hundred soil and water conservation practices are used nationally to achieve the program objectives of conservation districts. Vegetative practices are used in appropriate combinations with structural measures as needed locally.

Technical help to cooperators: Conservation treatments are usually scheduled for installation when labor and equipment are available, or between cropping seasons. Therefore, technical help must be provided when the farmer (or the local contractor that he may hire) is ready to install the practices on which assistance is needed. For example, a terracing system, field ditch, or waterway can be installed after crop harvest and before the next crop is planted. Improved vegetation is usually planted in early spring or fall. Farm ponds are built when earth moving equipment is available. Unless the needed help is furnished as scheduled, it is often necessary to delay practice installation for another year or so. For these reasons, the application of planned practices is of high priority in most districts. Conservation aids and WAE employment are often used during the peak workload seasons to more nearly meet the increasing demands. Employment of needed help locally with State or other local funds is encouraged.

Technical guidance on financing application of conservation work: Some landowners and operators have sufficient capital to pay the costs of practice installation. On a national basis they finance about 55 percent of the estimated total program costs. Most of them rely on their annual income to finance conservation work. Low-income farmers often require short-term loans, cost-sharing assistance, or local sources of credit to finance practice application. All must consider the economic returns on their investments in conservation work and the long-term benefits. The Soil Conservation Service technicians provide guidance on local financing and help to assure that expenditures are made on a sound basis.

Technical services with ACP cost-shares: The Service encourages district cooperators and other landowners to participate in the Agricultural Conservation Program. Such cost-sharing assistance is used by many landowners and operators to finance a part of the cost of installing their conservation program. For certain permanent-type practices, technical assistance is furnished for determinations of need and feasibility, site selection, technical installation supervision, and certification of completed work. During the 1964 program year, 358,748 ACP referrals were received by the Soil Conservation Service field offices, of which 348,162 were provided technical services. The Soil Conservation Service provides many technical services used in this cost-share program. In 1965 about half the cost was financed through county transfers from ASCS program funds, and 50 percent was absorbed as a part of the regular work in districts.

Conservation Practices Installed

The following table shows the amounts of soil and water conservation practices installed by landowners and operators in the fiscal year 1965 with technical assistance furnished by the Soil Conservation Service. The figures under Conservation Operations in the first column include amounts of certain practices installed by ACP participants with cost-sharing assistance. Most of these individuals were cooperators with soil conservation districts. The figures in the last column are a summary of local records and estimates of the total soil and water conservation and erosion control practices established on the land as of June 30, 1965.

Practices	Installed in 1965			:Est. 6/30/65 of Total Practices "On The Land"
	With Assistance Under			
	Conservation	Other		
	:Unit :	Operations	: Programs	
Bedding	:Acres:	19,262	: 2,248	: 398,969
Brush and Weed Control	:Acres:	5,092,269	: 779,110	: 32,742,596
Cattle Walkway	:Miles:	6	: -	: 253
Chiseling and Subsoiling	:Acres:	535,836	: 27,787	: 3,356,848
Clearing and Snagging	:Miles:	155	: 55	: 1,863
	: :		: :	
Conservation Cropping System	:Acres:	20,443,929	: 1,400,648	: 147,504,415
Contour Farming	:Acres:	4,082,383	: 442,947	: 41,717,487
Contour Furrowing	:Acres:	41,775	: 26,997	: 662,704
Contouring Orchard, Vineyard, or Small Fruits	:Acres:	8,489	: 247	: 184,290
Controlled Burning	:Acres:	366,027	: 16,523	: 2,888,064
	: :		: :	
Cover and Green Manure Crop	:Acres:	3,626,173	: 280,155	: 25,436,975
Critical Area Planting	:Acres:	69,455	: 36,879	: 1,302,236
Crop Residue Use	:Acres:	15,270,058	: 1,245,456	: 106,550,740
Cut-back Border	:Feet :	695,396	: 5,301	: 7,127,654
Dam, Diversion	:No. :	535	: 451	: 18,646
Dam, Multiple-purpose	:No. :	222	: 37	: 3,891
	: :		: :	
Debris Basin	:No. :	1,747	: 1,194	: 79,959
Desilting Area	:Acres:	1,409	: 25	: 2,640
Dike and Levee	:Miles:	224	: 21	: 8,220
Ditch Bank Seeding	:Miles:	1,496	: 129	: 17,130
	: :		: :	
Diversion	:Miles:	2,430	: 498	: 88,361
Drainage Land Grading	:Acres:	27,426	: 1,890	: 163,154
Drainage Main or Lateral	:Miles:	8,053	: 274	: 279,256
Dune Stabilization	:Acres:	6,049	: 59	: 81,090

	:	:	Installed in 1965		:
	:	:	With Assistance Under		:Est. 6/30/65 of
Practices	:	:	Conservation	:	Total Practices
	:Unit :	:	Operations	: Programs	: "On The Land"
Emergency Tillage	:Acres:	:	468,709	: 14,763	: 4,355,948
Farm Pond	:No. :	:	53,392	: 2,712	: 1,420,733
Farmstead and Feedlot Windbreak	:Acres:	:	40,923	: 1,545	: 637,243
Field Border Planting	:Miles:	:	1,236	: 43	: 38,309
Field Windbreak	:Miles:	:	3,418	: 699	: 75,839
	:	:	:	:	:
Firebreak	:Miles:	:	10,908	: 232	: 128,093
Fish and Crop Rotation	:Acres:	:	5,123	: 82	: 19,009
Fishpond Management	:No. :	:	19,212	: 1,056	: 113,513
Fishpond Stocking	:No. :	:	41,301	: 2,071	: 723,608
Floodwater diversion	:Feet :	:	15,545	: 1,119	: 1,046,154
Floodwater Retarding Structures	:No. :	:	210	: 451	: 7,423
	:	:	:	:	:
Floodway	:Miles:	:	13	: 15	: 296
Grade Stabilization Structures	:No. :	:	5,986	: 1,306	: 136,852
Grasses and Legumes in Rotation	:Acres:	:	1,507,598	: 60,868	: 17,821,663
Grassed Waterway or Outlet	:Acres:	:	69,107	: 8,362	: 1,706,889
	:	:	:	:	:
Hedgerow Planting	:Miles:	:	352	: 18	: 30,525
Hillside Ditch	:Miles:	:	362	: 117	: 7,586
Irrigation Canal or Lateral	:Miles:	:	344	: 3	: 37,179
Irrigation Ditch and Canal	:	:	:	:	:
Lining	:Miles:	:	1,512	: 40	: 18,736
Irrigation Field Ditch	:Miles:	:	3,182	: 77	: 116,581
	:	:	:	:	:
Irrigation Land Leveling	:Acres:	:	438,371	: 19,547	: 8,154,537
Irrigation Pipeline	:Miles:	:	3,925	: 177	: 42,607
Irrigation Pit or Regulating	:	:	:	:	:
Reservoir	:No. :	:	2,510	: 39	: 38,860
Irrigation Storage Reservoir	:No. :	:	1,478	: 34	: 36,115
Irrigation System, Sprinkler	:No. :	:	3,943	: 167	: 86,206
	:	:	:	:	:
Irrigation System, Surface and	:	:	:	:	:
Subsurface	:No. :	:	4,993	: 131	: 96,585
Irrigation System, Tailwater	:	:	:	:	:
Recovery	:No. :	:	471	: 13	: 6,340
Irrigation Water Management	:Acres:	:	2,544,024	: 115,213	: 10,900,269
Land Clearing	:Acres:	:	666,936	: 39,611	: 10,707,083
Land Smoothing	:Acres:	:	357,331	: 11,230	: 4,458,609
	:	:	:	:	:
Livestock Exclusion	:Acres:	:	830,694	: 56,137	: 17,633,030
Minimum Tillage	:Acres:	:	1,047,851	: 26,503	: 6,619,449
Mole Drain	:Miles:	:	14,350	: -	: 16,162
Mulching	:Acres:	:	31,595	: 883	: 362,534
Mulch Planting	:Acres:	:	40,902	: 701	: 167,203

Practices	:	:	Installed in 1965		:
	:	:	With Assistance Under		:Est. 6/30/65 of
	:	:	Conservation :		:Total Practices
	:Unit :	Operations	:	Programs	: "On The Land"
Obstruction Removal	:Acres:	35,327	:	771	: 623,737
Pasture and Hayland Renovation	:Acres:	1,452,918	:	129,474	: 17,399,592
Pasture and Hayland Planting	:Acres:	2,063,433	:	244,086	: 44,382,787
Pasture Proper Use	:Acres:	7,041,517	:	684,585	: 27,545,044
Pipeline	:Miles:	1,275	:	377	: 14,190
	:	:	:	:	:
Pitting	:Acres:	11,708	:	5,994	: 152,895
Plow Planting	:Acres:	108,318	:	4,374	: 1,421,950
Pond Sealing or Lining	:No. :	517	:	10	: 7,927
Pumped Well Drain	:No. :	4	:	-	: 112
Pumping Plant for Water Control	:No. :	2,197	:	53	: 40,233
	:	:	:	:	:
Range Deferred Grazing	:Acres:	14,208,843	:	700,377	: 48,185,135
Range Proper Use	:Acres:	58,804,665	:	5,839,122	: 179,723,521
Range Renovation	:Acres:	7,813	:	1,791	: 1,528,413
Range Rotation-Deferred Grazing	:Acres:	2,364,778	:	69,541	: 9,120,387
	:	:	:	:	:
Range Seeding on Converted Land	:Acres:	83,591	:	63,197	: 4,321,364
Range Seeding	:Acres:	254,210	:	111,204	: 7,536,474
(Total Range Seeding)	:Acres:	(337,801)	:	(174,401)	: (11,857,838)
Recreation Access Road	:Miles:	436	:	28	: 3,459
Recreation Area Planting	:Acres:	9,985	:	569	: 68,783
Recreation Area Pruning and	:	:	:	:	:
Thinning	:Acres:	3,284	:	376	: 27,900
Recreation Area Stabilization	:Acres:	1,957	:	12	: 16,548
Recreation Land Grading and	:Acres:	:	:	:	:
Shaping	:Acres:	4,091	:	1,382	: 63,072
Recreation Trail and Walkway	:Miles:	199	:	3	: 1,264
Regulating Water in Drainage	:	:	:	:	:
Systems	:Acres:	75,724	:	1,186	: 953,485
	:	:	:	:	:
Rock Barrier	:Miles:	3	:	-	: 51
Rotation Grazing	:Acres:	3,361,770	:	272,449	: 12,284,407
Row Arrangement	:Acres:	308,467	:	98,363	: 2,017,480
Spoilbank Spreading	:Miles:	5,956	:	333	: 116,862
Spring Development	:No. :	4,673	:	168	: 82,009
	:	:	:	:	:
Stock Trail	:Miles:	183	:	-	: 3,296
Streambank Protection	:Miles:	219	:	108	: 4,380
Stream Channel Improvement	:Miles:	676	:	482	: 9,156
Stream Channel Stabilization	:Feet :	52,565	:	4,120	: 2,570,970

Practices	:	:	Installed in 1965	:
	:	:	With Assistance Under	:Est. 6/30/65 of
	:	:	Conservation :	:Total Practices
	:Unit :	Operations :	Programs :	"On The Land"
Stripcropping, Contour	:Acres:	187,746 :	23,052 :	5,270,989
Stripcropping, Field	:Acres:	59,533 :	8,643 :	2,005,285
Stripcropping, Wind	:Acres:	357,228 :	75,769 :	12,804,524
(Total Stripcropping)	:Acres:	(604,507) :	(107,464 :	(20,080,798)
	:	:	:	:
Structures for Water Control	:No. :	87,058 :	2,350 :	1,395,451
Stubble Mulching	:Acres:	3,232,091 :	164,103 :	17,976,013
	:	:	:	:
Terrace, Basin	:Miles:	58 :	53 :	2,306
Terrace, Gradient	:Miles:	14,815 :	1,650 :	836,329
Terrace, Level	:Miles:	8,509 :	3,903 :	352,250
Terrace, Parallel	:Miles:	4,562 :	372 :	34,673
(Total Terraces)	:Miles:	(27,944) :	(5,978) :	(1,225,558)
	:	:	:	:
Tile Drain	:Miles:	22,035 :	442 :	621,639
Tile System Structure	:No. :	9,161 :	117 :	146,287
Toxic Salt Reduction	:Acres:	69,187 :	83 :	1,054,886
Tree Planting	:Acres:	288,076 :	22,241 :	11,837,976
Trough or Tank	:No. :	11,018 :	1,364 :	288,129
	:	:	:	:
Vegetative Barrier	:Miles:	301 :	231 :	6,000
Vertical Drain	:No. :	65 :	1 :	1,524
Waterspreading	:Acres:	26,403 :	12,834 :	853,583
Well	:No. :	6,702 :	1,256 :	324,835
	:	:	:	:
Wildlife Habitat Development	:Acres:	230,575 :	7,573 :	2,794,598
Wildlife Habitat Preservation	:Acres:	1,270,724 :	58,597 :	7,881,907
Wildlife Watering Facility	:No. :	306 :	4 :	5,249
Wildlife Wetland Development	:Acres:	68,474 :	851 :	730,146
Wildlife Wetland Preservation	:Acres:	182,213 :	1,240 :	1,537,469
	:	:	:	:
Woodland Direct Seeding	:Acres:	16,790 :	132 :	369,280
Woodland Harvest Cutting	:Acres:	818,577 :	13,098 :	13,539,227
Woodland Intermediate Cutting	:Acres:	844,294 :	12,934 :	13,108,662
Woodland Interplanting	:Acres:	27,694 :	1,377 :	765,129
Woodland Natural Seeding	:Acres:	61,769 :	1,221 :	2,700,793
	:	:	:	:
Woodland Proper Grazing	:Acres:	1,388,786 :	30,658 :	8,873,124
Woodland Pruning	:Acres:	12,224 :	3,002 :	332,423
Woodland Thinning	:Acres:	49,952 :	4,229 :	1,555,091
Woodland Underplanting	:Acres:	25,339 :	6,357 :	709,594
Woodland Weeding	:Acres:	395,082 :	13,847 :	8,615,269

Community-type Group Jobs

The Soil Conservation Service provides technical help to small groups of landowners in the planning, design and construction of jobs that provide community-type benefits. These jobs may involve a few adjoining farms which have closely related conservation problems, lands within the watershed of small tributary streams, or an entire community. In the 1965 fiscal year, 2,914 group jobs involving 1,360,975 acres were planned and layout designs prepared for installation. A total of 33,193 such community-type jobs have been prepared as a part of conservation district programs. These jobs involve over 24 million acres and about 235,000 landowners. They average about 7 cooperating participants and about 750 acres benefitted per group job.

Community benefits include prevention of flood damages, reduction of health hazards, improved water management, outdoor recreation facilities, pollution control, and stream channel improvement. While the costs of such jobs are financed mainly by the cooperating landowners, and cost shares from ACP pooling agreements, many public benefits result from the jobs installed. Sources of municipal water supply are improved; damages to local roads, structures, and public utilities reduced; and sedimentation in nearby reservoirs and streams are controlled by the structures installed. There is great need for such community-type group jobs in many rural areas that are associated with population growth and future expansion of urban centers.

Snow Survey and Water Supply Forecasting Activity

Snow surveys are conducted in cooperation with other Federal, State, and local agencies, irrigation and power companies, and the Province of British Columbia. The greatest need for advanced information on water is in arid areas of the West where snow-fed streams provide the water supply for agriculture, industry, municipal water supply, recreation, fish and wildlife, and other purposes.

The Service operates a network of snow courses and related data collection sites in ten Western States and Alaska. Systematic collection is made of information on a set schedule from 437 stations and at specified measurement points on water contained in the snowpack and in the soil. Analysis of this data permits the development of seasonal forecasts of water supply to be received at numerous locations along the rivers and at down stream reservoirs. Snow surveys are conducted in cooperation with many Federal, State, and local agencies, irrigation and power companies, and British Columbia. Data is gathered by personnel of the SCS and cooperators on skis, oversnow machines, and aircraft. Collection of data electronically has great potential.

The following table shows accomplishments in the 1965 fiscal year:

<u>Item</u>	<u>Number</u>
Snow course measurements	4,606
Aerial snow marker readings	701
Mountain precipitation gage readings	1,245
Soil moisture station readings	1,425
Numerical forecasts issued	2,313

Water supply forecasts are issued through the press, by radio, television, and in local and State forecast reports. Local water supply information is provided to the ranchers and farmers to assist them in making their farming and cropping plans for the coming season which depend on water supply. Regulatory Federal and private agencies use the information in their seasonal plans for flood control, irrigation storage and release and generation of electric power.

There is a continuing need to improve the forecast accuracy and to include the needs of additional areas. This is planned to be achieved by the collection of additional forecast parameters, such as wind movement, solar radiation and soil moisture; by obtaining more frequent measurements and; by better coverage of high runoff producing mountain areas.

This modern approach requires the development and use of automatic electronic data collection equipment, because the cost of doing so by manual means is prohibitive and the winter travel hazards are too great. Additional development and field trial work needs to be done in achieving this objective. Progress is being made in this direction.

Plant Material Centers

The Service has 19 plant material centers and authorization for another to become operative in 1966. These centers are located to meet the specific needs for improved conservation plants in the several plant growth regions. The main functions of such centers are to:

1. Assemble, evaluate, select, and increase seed and plants for use in soil and water conservation programs.
2. Determine reliable cultural and management methods.
3. Get proven materials into production by farmers and ranchers, and by commercial growers as soon as practical.

Seventeen of the twenty centers are operated by the Soil Conservation Service and three by cooperating agencies, as follows:

Operated by SCS:

Tuscon, Arizona	East Lansing, Michigan
Pleasanton, California	Coffeetown, Mississippi
Arcadia, Florida	Elsberry, Missouri
Kahului, Hawaii	Bridger, Montana
Aberdeen, Idaho	Cape May Courthouse, New Jersey
Manhattan, Kansas	Big Flats, New York
Quicksand, Kentucky (being established in FY 1966)	Corvallis, Oregon
Beltsville, Maryland	Knox City, Texas
	Pullman, Washington

Operated by cooperating agencies:

Americus, Georgia (University of Georgia)
Los Lunas, New Mexico (New Mexico State University)
Bismarck, North Dakota (North Dakota Assn. of Soil Conservation
Districts)

The system of selection and testing used by the centers is effective in getting new conservation plants into commercial production. The final evaluation of new plants is made on farms and ranches in conservation districts under adapted local use and management conditions. Testing work is also conducted with the public agencies responsible for highways, beaches, and parks. This work is carried out in cooperation with State and Federal experiment stations, State departments of conservation and game, and some research agencies.

In the West, commercial production is in balance with the need for conservation grasses and legumes, at a value above \$3,000,000 annually. In the Great Plains, commercial production still lags behind the needs for adapted strains and varieties of native grasses for range reseeding. In the South, such new conserving crops as Amclo clover, Svala lespedeza, Pensacola and

Wilmington bahiagrasses are now in certified seed production. Commercial seed production also is encouraged by providing a supply of foundation seed to soil and water conservation districts.

Many useful plants have been introduced to American agriculture by SCS plant material centers. These include plant materials for:

1. Wildlife, recreation, and beautification
2. Droughty sites, such as the western range reseeding
3. Critical erosion areas such as pond margins, road banks, and surface mine spoils
4. Wetlands, saline soils, and beach sands
5. Cover crops for soil protection and improvement

Most of the introductions are adapted to difficult soil and site conditions for vegetative cover. There is a continuing need for the selection and testing of improved plants that are adapted to such special uses.

Recreation and Natural Beauty

The Food and Agriculture Act of 1962 (P.L. 87-703) recognized recreation as an agricultural use of private lands. The Soil Conservation Service was assigned technical leadership in the Department for helping to develop income-producing recreation enterprises on non-Federal rural lands. More than 28,000 district cooperators have used such assistance in establishing recreational facilities in the past three years. About 60,000 acres of private lands have been diverted to this purpose. Natural beauty is also being encouraged along the roads and near the homesteads of rural America.

Information Activity

The Service distributes useful facts and information concerning the conservation and development of soil and water resources. This activity is to motivate owners and operators of agricultural lands and others to take needed action to solve the conservation and land-use problems of areas of concern to them. The demand for materials on soil and water conservation aimed primarily at land owners and operators in rural communities continued to be heavy.

The Government Printing Office is lithographing, in full color, 15 x 20 inches, the America The Beautiful exhibit of 52 rural conservation photographs composed of one from each State, Puerto Rico and the Virgin Islands. The photo salon has been exhibited throughout the country. Lithographic reproduction will make these scenes available to the public. The Superintendent of Documents will sell the sets at a nominal price.

The Soil Conservation Service's new film on snow surveys "Waters From The Mountain," which was produced jointly with Colorado State University, won

two top awards; the American Association of Agriculture College Editors-Farm Film Foundation \$500 award and the Industrial Photography's "Oscar" for the best film in its class.

During fiscal year 1965 the SCS issued nine new publications and ten revisions of existing publications. Emphasis was partly on those subjects that dealt with recreation and beauty. Included were Snow Surveys, Autumn Olive, The Great Plains Conservation Program, Warm Water Ponds for Fishing, and Soil and Water Conservation Activities - A Guide for Leaders of Girl Scouts.

Work was continued with youth groups, two of the highlights being participation in the Senior Girl Scout Roundup in Idaho and the U.S.D.A. Conservation Award Program to Scout Councils.

(b) Watershed Planning

Appropriation Act, 1966	\$5,721,000
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental	-8,000
Proposed supplemental, 1966, for increased pay costs	<u>140,000</u>
Base for 1967	5,853,000
Budget Estimate, 1967	<u>6,397,000</u>
Increase	<u>+544,000</u>

SUMMARY OF INCREASES AND DECREASES

	<u>1966</u> <u>Available</u>	<u>Increase or Decrease</u>		<u>1967</u> <u>Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
To accelerate watershed planning in the Appalachian Region	<u>a/</u>	- -	+\$515,000	\$515,000
Continuation of going program of watershed planning	<u>\$5,853,000</u>	<u>+\$29,000</u>	- -	<u>5,882,000</u>
Total	<u>5,853,000</u>	<u>+29,000</u>	<u>+515,000</u>	<u>6,397,000</u>

a/ This program was financed in 1966 from funds appropriated in a separate appropriation item in 1965.

PROJECT STATEMENT
(On the basis of appropriations)

Project	:	:	:	<u>Increases and Decreases</u>		:
				<u>Increased</u>	<u>Other</u>	
	:	1965	:	1966	:	1967
	:		:	(estimated)	:	(estimated)
	:		:	(P.L. 89-301)	:	
1. Small watershed	:	:	:	:	:	:
project investiga-	:	:	:	:	:	:
tions and planning	:	\$6,320,615	:	\$5,853,000	:	\$6,397,000
Total increased pay	:	:	:	:	:	:
cost (P.L. 89-301)	:	(- -)	:	(166,000)	:	(220,000)
Total available or	:	:	:	:	:	:
estimate	:	6,320,615	:	5,853,000	:	6,397,000
	:		:	+29,000(2)	:	+515,000

The preceding statement reflects increases and decreases on the basis of appropriations. The following tabulation shows estimated obligations for watershed planning, including balances brought forward from the 1965 fiscal year:

PROJECT STATEMENT
(On the basis of available funds)

Project	1965	1966	Increases or Decreases	1967
		(estimate)		(estimate)
1. Small watershed project investigations and planning ..	\$5,330,772	\$6,842,843	-\$445,843	\$6,397,000
Total increased pay costs (P.L. 89-301)	(- -)	(166,000)	(+54,000)	(220,000)
Unobligated balance start of year	- -	-989,843	+989,843	- -
Unobligated balance end of year ..	989,843	- -	- -	- -
Total available or estimate ...	6,320,615	5,853,000	+544,000	6,397,000

(1) An increase of \$515,000 to accelerate the development of watershed project work plans in the Appalachian region.

The \$515,000 increase would be used to continue the acceleration of watershed planning in the Appalachian region which began late in the fiscal year 1965 with funds from a supplemental appropriation of \$600,000. Even with this increase, on the basis of projected obligations, including pay act increases, there would be a \$72,000 decrease in the accelerated watershed planning effort in Appalachia in 1967 due to the availability in 1966 of \$587,000 in unobligated balances carried over from the supplemental appropriation of 1965. The \$515,000 increase would permit the retention in 1967 of about 60 of the 70 man years technical specialist help employed in 1966 to accelerate watershed planning in Appalachia. This increase would provide for the completion of about 8 additional watershed project work plans for a total of 20 to be completed in the Appalachian region in 1967. It is estimated that 15 of the 20 project work plans completed could be approved for operations and begin installation of planned works of improvement in 1967. The construction of watershed projects in Appalachia (as elsewhere) will directly benefit the people residing in the watershed areas through increased economic opportunities and the security that results from flood protection and development of water resources adequate to meet present and foreseeable needs for agriculture, industry, urban and recreational uses.

Due to the availability of \$989,843 in unobligated balances carried forward from 1965 to 1966, it is estimated that obligations for watershed planning will decrease from \$6,842,843 in 1966 to \$6,397,000 in 1967, a decrease of \$445,843. Because of the carryover of partially completed project work plans, resulting from the accelerated effort in 1966, it is estimated that work plans completed will actually increase by 5 for a total of 110 plans completed in 1967. New approvals for planning will be cut from 100 in 1966 to 50 in 1967. About 10 of the new approvals for planning will be in the Appalachian region.

Local sponsoring organizations need assistance and guidance from the Department to develop technically sound watershed work plans which provide for the practicable solution of complex soil and water management problems in local watershed communities. The project work plan is the foundation for the cooperative effort between local sponsoring organizations and the Department in carrying on work authorized under the Watershed Protection and Flood Prevention Act.

The following table shows applications received and actual and projected progress in planning small watershed projects:

Activity	: 1965 : Actual	: 1966 : Estimate	: 1967 : Estimate
Applications for planning assistance:	:	:	:
Received, current fiscal year	: 180	: 223	: 230
Received, cumulative at June 30	: 2,317	: 2,540	: 2,770
Not suitable for planning at June 30	: 265	: 270	: 275
Status of planning:	:	:	:
Authorized, current fiscal year	: 109	: 100	: 50
Authorized, cumulative at June 30	: 1,111	: 1,211	: 1,261
Suspended or terminated at June 30	: 156	: 165	: 170
Completed, current fiscal year	: 96	: 105	: 110
Completed, cumulative at June 30	: 713	: 818	: 928
In process at June 30	: 242	: 228	: 163
Remaining to be planned at June 30	: 941	: 1,059	: 1,234
Completed plans not yet approved	:	:	:
for operations	: 78	: 78	: 68

(2) An increase of \$29,000 to provide for full year cost of pay increases pursuant to P.L. 89-301. (An overall explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

Current Activities: The Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress), as amended (16 U.S.C. 1001-1008) provides for cooperation between the Federal Government and the States and their political subdivisions in watershed planning to prepare work plans which will serve as a basis for installing works of improvement for flood-water retardation, erosion control, and reduction of sedimentation in the watersheds of rivers and streams and to further the conservation, development, utilization, and disposal of water.

The work of the Department under this item consists of the making of investigations and surveys of proposed small watershed projects in response to requests made by sponsoring local organizations, and assistance in the development of watershed work plans. These plans specify the soil erosion, water management, and sedimentation problems in a watershed and the works of improvement proposed to alleviate these problems. Plans also include estimated benefits and costs, cost-sharing and operation and maintenance arrangements, and other appropriate information necessary to justify Federal assistance in developing and carrying out the plan.

Program Assignments

The Soil Conservation Service has general responsibility for administration of watershed planning work authorized by the Watershed Protection and Flood Prevention Act. This includes planning works of improvement for flood prevention and for the conservation, development, utilization and disposal of water in watershed or subwatershed areas not exceeding 250,000 acres. All interested Federal agencies are given an opportunity to participate in and contribute to work plan preparation to help assure that works of improvement included in work plans are in harmony with related work of other Federal agencies.

The Forest Service is responsible for planning the forestry phases of the watershed program. The Economic Research Service assists with development of criteria to be used in economic analysis of watershed projects.

The Department of Interior's Bureau of Land Management and Bureau of Indian Affairs are provided funds on a reimbursable basis when needed to plan watershed measures for Federal lands for which they have management responsibility. The U. S. Weather Bureau of the Department of Commerce and the U. S. Geological Survey of the Department of Interior are reimbursed for precipitation and runoff data needed in the development of work plans.

Selected Examples of Recent Progress:

Agency Participation

The following table shows the amount of funds obligated for small watershed project investigations and planning in 1965 and estimates for 1966 and 1967 by agency.

Agency	: 1965	: 1966	: 1967
	: Obligations	: Estimate	: Estimate
Soil Conservation Service	: \$4,912,813	: \$6,365,543	: \$5,916,100
Economic Research Service	: 22,592	: 23,300	: 25,900
Forest Service	: 395,367	: 454,000	: 455,000
Total	: 5,330,772	: 6,842,843	: 6,397,000

Status of Work Plan Development

During the fiscal year 1965, the Department received 180 State-approved applications for Watershed planning assistance from local sponsors of proposed small watershed projects. This brought the total number of applications received from local organizations to 2,317 as of June 30, 1965. These applications covered 165,644,100 acres in 49 States and Puerto Rico. During the fiscal year 1965 an additional 109 applications were approved for planning assistance which brought to 1,111 the total number that had been approved for planning since the inception of the program. Watershed work plans had been completed on 713 of these watersheds as of June 30, 1965, and planning had been suspended or terminated on 156 other watersheds for which work plans had been partially completed. The suspensions and terminations were at the request of the local sponsoring organizations or with their concurrence when it became evident that the planning activity would be significantly delayed due to local problems or could no longer be justified on a cost-benefit ratio.

As of June 30, 1965, watershed planning assistance has not been started on 1,206 of the applications received from local sponsors of proposed small watershed projects. It is estimated that 800 of the watersheds covered by these applications are currently suitable for the development of project work plans and that about 400 will not qualify for assistance under present criteria.

The following table shows applications received and actual and projected progress in planning small watershed projects:

Activity	1965	1966	1967
	Actual	Estimate	Estimate
Applications:			
Received, current fiscal year	180	223	230
Received, cumulative at June 30	2,317	2,540	2,770
Not suitable for planning at June 30 .	265	270	275
Status of planning:			
Authorized, current fiscal year	109	100	50
Authorized, cumulative at June 30	1,111	1,211	1,261
Suspended or terminated at June 30 ...	156	165	170
Completed, current fiscal year	96	105	110
Completed, cumulative at June 30	713	818	928
In process at June 30	242	228	163
Remaining to be planned at June 30 ...	941	1,059	1,234
Completed plans not yet approved			
for operations	78	78	68

Planning Small Watershed Projects

Watershed project planning is a coordinated and integrated investigation of the physical, social, and economic conditions inherent to a particular watershed and an analysis of alternative methods to produce an acceptable solution.

When it is determined that a plan will provide substantial benefits from flood prevention or agricultural water management, consideration is given to all other phases of the conservation, development, utilization, and disposal of water. This includes such purposes as municipal and industrial water supply, recreation, and fish and wildlife.

The technical phase of watershed planning is a coordinated study by a team of technicians representing generally the disciplines of economics, hydrology, geology, and engineering, with supporting help, as needed, from specialists in the fields of soil science, biology, plant technology, recreation and watershed planning. The technical study must be made with a complete understanding of watershed problems, the causes of the problems, and the objectives of the local people.

A watershed plan is the result of the planning technicians arriving at a system of interrelated works of improvement which are economically and technically feasible and which meet the needs and desires of the local people. The plan must be one which the local people are able, willing, and ready to install with assistance provided under the program, and one which they can and will effectively operate and maintain.

Watershed Planning Progress by State

The following tabulation shows a breakdown by State of the applications received, authorized for planning assistance, and watershed work plans completed as of June 30, 1965.

STATE	APPLICATIONS RECEIVED		AUTHORIZED FOR PLANNING ASSISTANCE		PLANS COMPLETED	
	No.	Acres (1000)	No.	Acres (1000)	No.	Acres (1000)
Alabama	44	3,125.1	25	1,682.6	20	1,365.0
Alaska	0	0	0	0	0	0
Arizona	23	2,086.8	11	1,260.5	8	769.8
Arkansas	83	6,019.8	40	2,534.9	31	1,372.5
California	53	3,826.4	34	2,231.0	12	644.5
Colorado	45	3,085.4	22	1,364.9	12	597.0
Connecticut	21	312.8	11	226.0	7	119.4
Delaware	6	356.8	4	301.7	3	224.9
Florida	54	4,069.3	23	1,835.0	14	857.0
Georgia	131	8,470.4	47	2,767.8	36	1,932.6
Hawaii	6	283.6	5	274.4	4	43.3
Idaho	44	4,895.2	15	1,124.7	4	213.1
Illinois	57	3,219.2	26	1,109.4	11	597.3
Indiana	77	6,444.9	31	2,144.5	18	896.7
Iowa	65	1,364.5	38	636.4	29	496.5
Kansas	72	7,018.3	40	3,775.8	23	1,674.3
Kentucky	143	6,966.0	33	2,547.0	24	1,885.6
Louisiana	49	4,313.5	28	2,597.9	15	1,209.3
Maine	20	1,244.5	9	577.4	3	174.1
Maryland	28	610.4	15	266.7	11	222.5
Massachusetts	24	901.8	13	554.4	7	385.5
Michigan	33	1,821.8	17	566.9	11	380.8
Minnesota	45	3,541.2	20	1,841.5	12	979.6
Mississippi	60	3,606.1	34	2,428.3	24	1,720.0
Missouri	40	2,454.3	16	1,069.0	11	558.8
Montana	31	2,026.3	13	850.8	4	98.4
Nebraska	66	4,173.6	35	2,275.5	26	1,230.1
Nevada	22	2,590.8	10	1,528.1	5	350.5
New Hampshire	13	980.8	11	893.1	4	269.0
New Jersey	29	577.8	14	305.3	10	239.3
New Mexico	74	6,883.8	34	2,865.3	18	782.2
New York	28	1,532.7	16	953.5	8	531.8
North Carolina	67	3,724.7	41	1,935.0	30	1,181.9
North Dakota	41	6,266.1	21	3,549.5	11	1,628.3
Ohio	42	3,795.3	13	840.1	10	567.5
Oklahoma	103	11,223.0	47	4,863.3	41	4,274.5
Oregon	42	4,186.6	14	916.5	7	164.5
Pennsylvania	37	1,731.6	24	1,577.9	18	837.5
Rhode Island	1	56.9	1	56.9	0	0
South Carolina	40	1,551.6	24	836.7	16	513.2
South Dakota	25	2,148.9	16	1,385.7	8	379.3

STATE	APPLICATIONS RECEIVED		AUTHORIZED FOR PLANNING ASSISTANCE		PLANS COMPLETED	
	No.	Acres (1000)	No.	Acres (1000)	No.	Acres (1000)
Tennessee	67	3,539.5	36	1,638.6	25	1,004.7
Texas	129	13,308.6	67	6,776.8	49	4,466.6
Utah	37	3,371.6	14	1,120.3	10	1,060.4
Vermont	13	1,141.2	7	640.9	2	18.9
Virginia	48	2,192.5	22	1,294.5	17	950.8
Washington	36	2,448.5	14	823.0	7	89.4
West Virginia	30	752.8	19	477.5	12	140.9
Wisconsin	38	1,948.2	24	1,241.9	15	596.1
Wyoming	29	3,109.9	12	1,266.9	7	360.5
Puerto Rico	6	342.7	5	292.8	3	252.0
Totals	2,317	165,644.1	1,111	76,925.1	713	41,308.4

Cost of Planning a Watershed Project

Watershed planning activities are being carried out in all states except Alaska. Planning organizations currently are staffed in each of the 49 remaining states with exception of Rhode Island and Delaware where service is provided by the planning staffs administratively headquartered in Connecticut and Maryland, respectively. A number of states, that are undertaking river basin investigations under authority of Section 6 of Public Law 566 have integrated the regular watershed planning staff with the river basin investigation unit. This action was taken to provide more effective utilization of technical personnel in carrying out the functions associated with these activities. The size of the planning organizations vary according to the workload in a state. Watershed planning funds allotted to the states averaged approximately \$88,000 per state during 1965, ranging from \$30,000 for Hawaii to \$145,000 for Texas.

In the fiscal year 1965 State legislatures and other local organized units in 31 states and Puerto Rico appropriated or otherwise provided through official facilities of the State governments about \$2,606,000 to supplement Federal funds for watershed planning. This was accomplished through trust fund agreements, reimbursements, state controlled watershed planning parties, and personnel provided by the states to supplement Service watershed planning staffs. The contribution to the planning effort from such sources has increased each year since 1960 when approximately \$1,000,000 was made available.

The total cost of planning a watershed project (including state and local funds) averaged about \$87,000 over the last three years. Of this amount, Federal funds averaged about \$62,000 per plan. Although watershed protection and flood prevention remain dominant objectives of the watershed program, there has been a decided upward trend in the number of multiple-purpose projects being planned and approved for operations. This has come about as a result of amendments to Public Law 566 which have broadened the scope of activities and the authorities under which the program is carried out. Planning costs have been increased slightly due to the more complex investigations associated with multiple-purpose project formulation. However, the added cost is fully justified because the projects so formulated more adequately meet the total resource development needs of the watershed community and surrounding area.

(c) Watershed Protection

Appropriation Act, 1966	\$65,671,000
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration", for space rental	-65,000
Supplemental appropriation to initiate a comprehensive survey of the North Atlantic Region	+140,000
Proposed supplemental, 1966, for increased pay costs	+585,000
Base for 1967	66,331,000
Budget Estimate, 1967	66,559,000
Increase	<u>+228,000</u>

SUMMARY OF INCREASES AND DECREASES

	1966 <u>Appropriation</u>	<u>Increase or Decrease</u>		1967 <u>Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
To accelerate river basin surveys and investigations ..	\$5,884,100	+\$46,600	+\$1,983,300	\$7,914,000
Installation of works on im- provement in "Pilot" water- sheds	439,900	+1,800	-35,700	406,000
Installation of works of im- provements in P.L. 566 water- sheds	54,507,000	+176,600	-1,444,600	53,239,000
Loans to local sponsors of P.L. 566 watershed projects	5,500,000	- -	-500,000	5,000,000
Total	<u>66,331,000</u>	<u>+225,000</u>	<u>+3,000</u>	<u>66,559,000</u>

PROJECT STATEMENT

Project			<u>Increases and Decreases</u>		
	1965	1966			1967
		Estimate	Increased Pay Costs (P.L. 89-301)	Other	Estimate
1. Watershed Works of Improvements:					
(a) Pilot Water- sheds	\$968,918	\$439,900	\$1,800	-\$35,700(1)	\$406,000
(b) P.L. 566 water- sheds	59,227,303	54,507,000	176,600	-1,444,600(2)	53,239,000
2. Loans and related: expense	7,100,000	5,500,000	- -	-500,000(3)	5,000,000
3. River basin pro- gram development and coordination .	3,943,469	5,884,100	46,600	:+1,983,300(4)	7,914,000
Total increased pay costs (P.L. 89-301):	- -	(606,000)	(+225,000)	(+50,200)	(881,200)
Total available or estimate	a/ 71,239,690	66,331,000	+225,000(5)	+3,000	66,559,000

a/ The 1965 amount includes the supplemental appropriation of \$10,220,000 made in 1965 for the Appalachian program. Of this amount, \$1,798,390 was obligated in 1965.

The preceding project statement reflects increases and decreases on the basis of appropriations. The following statement reflects carryover into succeeding years of actual or estimated prior-year unobligated balances and shows actual and estimated obligations.

PROJECT STATEMENT
(On the basis of available funds)

Project	1965	1966 Estimate	Increase or Decrease	1967 Estimate
1. Small watershed project investment and planning	-\$11,405	- -	- -	- -
2. Watershed works of improvement:				
(a) Pilot watersheds	804,235	\$439,900	-\$33,900	\$406,000
(b) P.L. 566 watersheds	54,797,162	59,716,967	-3,477,967	56,239,000
3. Loans and related expense	5,357,977	7,264,841	-2,264,841	5,000,000
4. River basin program development and coordination	3,837,828	6,221,741	+1,692,259	7,914,000
Total obligations	64,785,797	73,643,449	-4,084,449	69,559,000
Unobligated balance, start of year.	-3,858,556	-10,312,449	+7,312,449	-3,000,000
Unobligated balance, end of year ..	10,312,449	3,000,000	-3,000,000	- -
Total available or estimate	71,239,690	66,331,000	+228,000	66,559,000

The following is a justification of the increases and decreases in appropriations requested:

INCREASES AND DECREASES

(1) A decrease of \$35,700 for installation of works of improvement in pilot watersheds.

Sixty-two pilot watersheds were started in the fiscal year 1954 in cooperation with local sponsors under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f), to demonstrate and evaluate the effectiveness of works of improvement installed in small watersheds. Eight of these were subsequently discontinued at the request of local sponsors. By June 30, 1966, it is estimated that all works of improvement will have been completed in 53 projects. This will leave only one project, Cow Bayou in Texas, in operation in 1967. It is expected to be completed by the end of that year. It is estimated that \$304,000 will be sufficient for installation of works of improvement in this watershed in 1967. The remaining \$102,000 budgeted for 1967 will be needed for project evaluation studies which are scheduled to continue at about this level in 10 projects through the fiscal year 1970.

The following table shows the status of the active pilot projects and actual or estimated obligations (dollars in thousands):

Explanation	1965		1966		1967	
	: Actual:		: Estimate:		: Estimate	
	: Number:	: Amount:	: Number:	: Amount:	: Number:	: Amount:
Projects completed during year ..	1:	\$62:	4:	\$242:	1:	\$304
Continuing projects	5:	639:	1:	96:	- -:	- -
Project evaluation studies	- -:	103:	- -:	102:	- -:	102
Total appropriation	6:	804:	5:	440:	1:	406

(2) A decrease of \$1,444,600 for installation of works of improvement in P.L. 566 watershed projects:

By the end of the fiscal year 1966 it is estimated that a total of 740 watershed projects will have been approved for operations under Public Law 566. Of this number an estimated 113 projects will have been completed, leaving 627 projects underway at the end of 1966. It is estimated that an additional 120 projects will be approved for operations in 1967, for a total of 747 projects underway during that year.

The \$56,239,000 estimated to be available in 1967 would permit 35 new construction starts in 1967 of which 7 are expected to be in the Appalachian region.

The projected obligations would fund all projects estimated to be underway in 1967 at about \$75,000 for each project.

The following tabulation shows on a national basis the status of projects by category of assistance provided, and funds obligated in 1965 and programmed for obligation in 1966 and 1967 on the basis of available funds:

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	: Amount:		: Amount:		: Amount:	
	: Num-: (Thou-:ber : sands):	: Num-: (Thou-:ber : sands):	: Num-: (Thou-:ber : sands):	: Num-: (Thou-:ber : sands):	: Num-: (Thou-:ber : sands):	: Num-: (Thou-:ber : sands):
1. Projects approved for operations and estimated costs of completion:	:	:	:	:	:	:
(a) Uncompleted projects at beginning of year	503:	\$374,639:	552:	\$376,772:	627:	\$422,055
(b) Projects approved during year	66:	56,914:	105:	105,000:	120:	120,000
Total	569:	431,553:	657:	481,772:	747:	542,055
2. Status of projects and amounts obligated:	:	:	:	:	:	:
(a) Projects not requiring funds during year	24:	- -:	24:	- -:	24:	- -
(b) Projects receiving land treatment and engineering services only	195:	3,065:	240:	4,514:	358:	6,802

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	Amount		Amount		Amount	
	Num-ber	(Thou-sands)	Num-ber	(Thou-sands)	Num-ber	(Thou-sands)
(c) Projects moved into construction stage during year	59:	13,506:	80:	18,565:	35:	8,143
(d) Prior year projects continuing construction and land treatment.	291:	38,210:	313:	36,638:	330:	41,294
(Projects included above completed during year)	(17):	(33):	(30):	(271):	(40):	(200)
Total	569:	54,781:	657:	59,717:	747:	56,239
3. Uncompleted projects (cumulative) at end of year:						
(a) Obligations to date	552:	248,421:	627:	296,694:	707:	335,823
(b) Estimated cost of completion .	552:	376,772:	627:	422,055:	707:	485,816
4. Projects completed (cumulative) and total cost	83:	23,926:	113:	35,370:	153:	52,480
5. Total projects approved (cumulative) and estimated total cost ...	635:	649,119:	740:	754,119:	860:	874,119
6. Total obligations (cumulative) .	- -:	272,347:	- -:	332,064:	- -:	388,303

(3) A decrease of \$500,000 for watershed protection loans and related expense.

The proposed appropriation of \$5,000,000 for watershed loans in 1967 will provide for the most urgent needs. It will provide for about 23 loans totaling \$4,600,000. The remaining \$400,000 is for loan processing and administrative expenses. In 1966 a total of \$1,764,260 is expected to be obligated for loans in Appalachia and \$5,000,581 for loans in watershed projects in other areas. The remaining \$500,000 is for loan processing and administrative expenses. The following tabulation shows the status of the watershed protection loan program and amounts estimated to be obligated for loans:

(Dollars in thousands)

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	Number	Amount	Number	Amount	Number	Amount
1. Applications on hand at beginning of year	132:	\$26,175:	180:	\$35,245:	241:	\$47,480
2. Applications received during year	75:	15,000:	100:	20,000:	150:	30,000

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	Number	Amount	Number	Amount	Number	Amount
3. Total applications for consideration during year	207	41,175	280	55,245	391	77,480
4. Loans obligated during year	23	5,130	34	6,765	23	4,600
5. Loans closed during year (disbursements)	(20)	(4,154)	(40)	(8,100)	(23)	(4,600)
6. Applications withdrawn or disapproved	4	800	5	1,000	5	1,000
7. Applications pending at end of year	180	35,245	241	47,480	363	71,880
8. Loans obligated end of year (cumulative)	92	16,936	126	23,701	149	28,301

(4) An increase of \$1,983,300 for river basin program development and coordination.

The Senate Select Committee on National Water Resources has recommended and the Administration has adopted the objective that surveys and investigations be made of the major river basins of the country by 1970. The \$1,983,300 increase requested in 1967 would enable the Department to participate in a coordinated program aimed at approaching this objective. Estimates of this Department and the Departments of the Army, of Interior, and of Health, Education and Welfare for river basin planning funds for the fiscal year 1967 have been coordinated.

The increase proposed is essential to assure that the upstream, rural and agricultural aspects of the river basins under survey will be adequately considered. Without the active participation by the Department in such surveys, little consideration is given to water and related land resource problems and needs in upstream areas. Survey reports and development plans proposed as comprehensive plans by other agencies customarily are limited to large main-stem and principal tributary reservoirs and levees and to local protection works at larger population centers. Such reports generally fail to provide adequately for consideration of upstream development opportunities. As a result the best means of meeting downstream needs may not be employed. Major river developments planned without participation of the Department of Agriculture may have an adverse impact on agricultural developments, national forest, rural electrification, and rural areas development. Such development programs are made more effective as a result of the Department's participation in comprehensive river basin surveys.

Comprehensive river basin surveys provide information on the total needs for water in river basins, its management, and control. These surveys determine the water and related land resource improvements needed to satisfy those needs. This makes for efficient resource development and minimizes conflicts.

River basin surveys also determine the need for upstream watershed projects for which the Department of Agriculture is responsible and make future planning of individual watershed projects less costly and time consuming. They also provide a basis for coordinating these projects with each other and with the downstream projects of other agencies for water use and development.

Of the total request of \$7,914,000 for 1967, an estimated \$1,797,000 would be used for Type I comprehensive framework surveys, an increase of \$728,000 over the estimated obligations for such surveys in 1966. The proposed increase would adequately fund the 5 surveys underway in 1966, one of which is expected to be completed in 1967, and permit the initiation of 3 new Type I surveys, namely the California, Upper Colorado, and Lower Colorado Regions.

It is estimated that 6 of the 15 Type II detailed surveys currently underway can be completed in 1967. This will reduce fund needs for these surveys from \$2,416,000 estimated available in 1966 to \$2,300,000 in 1967, a decrease of \$116,000.

An increase of \$518,000 is needed in 1967 for Type IV surveys conducted in cooperation with State Water Resource Agencies and concerned Federal agencies. This would make a total of \$2,339,000 available for such surveys in 1967 which would adequately fund the 14 surveys continuing from 1966 and permit the making of 4 new starts for a total of 18 surveys underway during the year. One of these is scheduled for completion in 1967. The estimate of 4 new starts is the number that can reasonably be initiated in 1967 out of 15 requests for such surveys currently on hand.

The Appalachian Regional Development Act of 1965 authorizes the Secretary of the Army to prepare a comprehensive plan for the development and efficient utilization of the water and related resources of the Appalachian region. It provides for consultation with the Secretary of Agriculture and others to insure that the plan prepared is a harmonious component of the regional program. It authorizes the Secretary of Agriculture and others to assist the Secretary of the Army in the preparation of the plan. While limited funds appropriated to the Corps of Engineers are being used to reimburse the Department for a portion of the technical assistance required, an increase of \$453,000 is needed to enable the Department to participate adequately in the survey to assure that the water and related resource development needs in the upstream watershed areas are considered.

An increase of \$95,000 is needed to enable the Department to participate in Inter-Agency activities concerned with the conservation, development, and utilization of the Nation's water and related land resources. The Department is represented on the Inter-Agency Committee on Water Resources, maintains representatives on 6 individual river basin inter-agency committees, and is a member agency of the Water Resource Council. The increasing interest on the part of the States in planning for the development and use of water and related land resources has led to steady progress in coordinating the activities and plans of Federal agencies between each other and with the concerned States. The increase is needed to achieve a level of activity by the Department consistent with other agencies and with the schedule for the development of coordinated programs.

The surveys, by type of survey, States concerned, participating agencies, and actual or estimated obligations are shown in the following table on an available fund basis. (A similar table showing obligations for continuing prior year surveys and those proposed for initiation in 1966 and 1967 appears at the end of the status of program section.)

(Dollars in thousands)

River Basin or Region	States Involved	Cooperating Agencies	Obligations		
			1965 Actual	1966 Estimate	1967 Estimate
<u>Framework Type</u>					
<u>Surveys</u>					
(Type I)					
Ohio River Basin	Pa., N.Y., W.Va., Tenn., Ohio, Ind., Ill., Md., N.C. & Ky.	Other Federal	\$197	\$182	\$72
Upper Mississippi River Region	Minn., Wisc., Iowa, Mo., Ill., & Mich.	Other Federal	141	269	240
Missouri River Region	Colo., Iowa, Kan., Minn., Mo., Mont., Nebr., N.D., S.D., & Wyo.	Other Federal	211	409	420
Columbia-North Pacific Region	Wash., Ore., Idaho, Mont., Utah, Nev. & Wyo.	Other Federal	--	66	330
North Atlantic Region	Conn., Del., Me., Md., Mass., N.H., N.J., N.Y., Pa., R.I., Vt., Va., & W.Va.	Other Federal	--	143	288
California Region	Calif., Oregon	Other Federal	--	--	176
Upper Colorado Region	Ariz., Colo., N.M., Utah & Wyo.	Other Federal	--	--	138
Lower Colorado Region	Ariz., Nev., N.M. & Utah	Other Federal	--	--	133
Total, Type I Surveys			(549)	(1,069)	(1,797)
<u>Detailed Type Sur- veys</u>					
(Type II)					
Kanawha River ...	W.Va., Va., & N.C.	Other Federal	120	163	185
Wabash River	Ill., Ind., & Ohio	Other Federal	197	272	264
Susquehanna River	N.Y., Pa., & Md.	Other Federal	144	200	208
Willamette River	Oregon	State and Other Federal	165	187	201
Pearl River	Miss., & La.	State and Other Federal	71	106	89
Pascagoula River	Miss.	State and Other Federal	117	138	146
Big Black River	Miss.	State and Other Federal	44	69	89
Red River below Denison Dam	La., Ark., Okla. & Texas	Other Federal	162	188	181
Genesee River ...	N.Y. & Pa.	State and Other Federal	103	125	51

River Basin or Region	States Involved	Cooperating Agencies	Obligations		
			1965 Actual	1966 Estimate	1967 Estimate
(Type II)-continued					
Sabine River	:Texas & La.	:Other Federal:	112	: 148	: 78
White River	:Mo., & Ark.	:Other Federal:	153	: 204	: 203
Connecticut River	:Conn.,Vt.,N.H., & :Mass.	:Other Federal:	134	: 201	: 218
Puget Sound	:Washington	:Other Federal:	131	: 170	: 183
Big Muddy River .	:Illinois	:Other Federal:	58	: 117	: 83
Grand River	:Michigan	:Other Federal:	108	: 128	: 121
Total, Type II	:	:	:	:	:
Surveys	:	:	:(1,819)	(2,416)	:(2,300)
Surveys in coopera-	:	:	:	:	:
tion with State	:	:	:	:	:
Water Resource	:	:	:	:	:
Agencies and Con-	:	:	:	:	:
cerned Federal	:	:	:	:	:
Agencies (Type IV)	:	:	:	:	:
Arkansas Multiple-	:	:Corps of	:	:	:
Purpose Project	:Ark., & Okla.	: Engineers	: 59	: 86	: 92
Humboldt-Central	:	:	:	:	:
Lahontan (Carson,	:	:	:	:	:
Truckee & Walker	:	:	:	:	:
Rivers)	:Nevada & Calif.	:State	: 85	: 121	: 129
Sevier Lake Drain-	:	:	:	:	:
age	:Utah	:State	: 131	: 148	: 154
Colorado Rivers .	:Colorado	:State	: 109	: 149	: 165
Oregon Rivers ...	:Oregon	:State	: 88	: 120	: 123
Elkhorn, Big Blue	:	:	:	:	:
and Niobrara	:	:	:	:	:
Rivers	:Nebraska	:State	: 92	: 128	: 129
Florida Rivers ..	:Florida	:State	: 121	: 154	: 154
James and Big	:	:	:	:	:
Sioux Rivers ...	:S.D.	:State	: 98	: 127	: 129
Meramec River ...	:Missouri	:Corps of	:	:	:
:	:	: Engineers	: 106	: 132	: - -
Poteau River	:Okla. & Ark.	:Corps of	:	:	:
:	:	: Engineers	: 60	: 21	: - -
Tombigbee River .	:Miss., & Ala.	:State	: 1	: - -	: - -
Mississippi Inde-	:	:	:	:	:
pendent Streams	:Miss., & La.	:State	: 1	: 16	: 154
North Coastal	:	:	:	:	:
River Basin	:Calif.	:State	: 94	: 173	: 159
Upper Rio Grande	:New Mexico	:State	: 2	: 128	: 129
Arkansas River in	:	:	:	:	:
Kansas	:Kansas	:State	: - -	: 112	: 129
Lower Rio Grande	:Texas	:State	: - -	: 112	: 129
South Grand and	:	:	:	:	:
Osage Rivers ...	:Missouri	:State	: - -	: 94	: 129

River Basin or Region	States Involved	Cooperating Agencies	Obligations		
			1965	1966	1967
			Actual	Estimate	Estimate
Continued Type IV					
James River	Virginia	Corps of Engineers	- -	- -	144
Santee River	S.C.	State	- -	- -	111
Western New York Basins	N.Y.	State	- -	- -	103
Chickasaw Metro- politan Water Management Proj.	Tenn.	State	- -	- -	77
Total, Type IV Surveys			(1,047)	(1,821)	(2,339)
Water Resource Sur- vey Appalachian Region			- -	- -	453
Total Surveys ...			(3,415)	(5,306)	(6,889)
Interregional Eco- nomic Analysis ...			80	170	184
Inter Agency Co- ordination and Pro- gram Formulation and Coordination .			343	746	841
TOTAL			3,838	6,222	7,914

(5) An increase of \$225,000 to provide for the full year cost in fiscal year 1967 of the pay increase pursuant to P. L. 89-301. (An overall explanation of increases for pay act cost is included in the Preface to these Explanatory Notes in Volume 1.)

STATUS OF PROGRAM

Current Activities: The Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress), as amended (16 U.S.C. 1001-1008) provides for cooperation between the Federal Government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damages in the watersheds of rivers and streams and to further the conservation, development, utilization, and disposal of water. The work of the Department under this item consists of the following:

1. Technical and financial assistance in the installation of works of improvement specified in approved watershed work plans. These works include:
 - a. Structural measures: Primary works installed in projects generally consist of structural measures for flood prevention and water management, such as floodwater retarding structures, stream channel improvements, stabilizing and sediment control structures, water storage structures, etc. Detailed construction plans, designs and specifications are prepared for these measures by the Department, or by engineers employed by the local sponsoring organization. The Federal government bears all of the construction cost of structural measures for flood prevention and an equitable part of the cost of installing works of improvement for agricultural water management and fish and wildlife or recreational development (including cost of minimum basic facilities for public health and safety and access to recreational areas). Local organizations must pay all cost of works of improvement for other purposes. In addition, local organizations must acquire water rights and furnish land, easements, and rights-of-way for all structural measures except that the Federal government may pay up to one-half the cost of land, easements, and rights-of-way allocated to public fish and wildlife and recreational developments. Local organizations must also administer all construction contracts and operate and maintain the completed works of improvement on non-Federal lands.

Advances may be made to local sponsoring organizations from construction funds to provide for immediate acquisition of easements and rights-of-way to prevent encroachment by other developments. Advances may also be made to provide up to 30 percent of the total estimated cost of a proposed impounding structure for additional storage of water to meet anticipated future demands for municipal and industrial uses. In each case, advances must be repaid with interest. Advances for preservation of structure sites must be repaid before construction starts for credit to construction funds.

Funds for installation of planned structural measures on non-Federal lands are provided to local organizations under the terms and conditions set forth in project agreements. Federal agencies carry out the watershed construction program on Federal lands which they administer.

Engineering assistance is provided for flood prevention, agricultural water management, and for water resource development or improvement for public fish and wildlife and recreational purposes directly by the Federal government or by the local organizations with advances or reimbursement from the Federal government. The Department may also supply up to one-half the cost of engineering assistance required in connection with installation of minimum basic facilities for public fish and wildlife and recreational developments.

- b. Land treatment measures: Assurance of carrying out a program of proper land use and treatment is a basic requirement in obtaining approval for assistance in developing a watershed project. The Department furnishes farmers and ranchers technical assistance needed to speed up the planning and application of land treatment measures in order to achieve project objectives. This assistance supplements that being received under other conservation programs to the extent that such assistance falls short of meeting project objectives.

Certain types of land treatment measures are required to be installed under this program to achieve justified off-site flood prevention benefits. Such measures provide little or no benefits, or such long-deferred benefits to the landowner that he cannot be expected to bear the entire installation cost. The cost of applying such measures may be paid for in part by the Department under authority of Section 3 of the Watershed Protection and Flood Prevention Act. The rate of financial assistance on such special measures may not exceed the rate of assistance for similar practices under other conservation programs of the Department. Measures currently eligible for financial assistance include those for intensified fire protection, stabilization of critical areas, minor gully, streambank, and grade stabilization structures, and other on-farm measures which may be used in lieu of downstream flood prevention structures. This work is accomplished through project agreements with local sponsoring organizations who arrange for and accomplish the work by contract or force account. Payments are made by the Federal government to the local sponsoring organizations as the land treatment measures are installed.

2. Installation of works of improvement in five currently active "pilot" watersheds out of the 62 originally authorized by the Congress under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f).
3. Program evaluation studies in selected watershed projects to determine the effectiveness of structural and land treatment measures installed.
4. The making of loans to local organizations to finance the local share of the costs of installing planned works of improvement for flood prevention and for the conservation, development, utilization and disposal of water. This includes developments for public fish, wildlife, and

recreation and for municipal and industrial water supplies for present use and future needs. Repayment with interest is required within 50 years after the principal benefits of improvements first become available.

5. Surveys and investigations of watersheds of rivers and other waterways in cooperation with other Federal, State and local agencies, as the basis for development of coordinated water and related land resources program, and interagency coordination activities in connection with the water and related land resource programs of States and other Federal agencies.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the Watershed Protection and Flood Prevention Act. This includes responsibility for the installation of structural works of improvement and land treatment measures on non-Federal land in authorized watersheds. The Service also installs some works of improvement on Federal lands by arrangement with the administering agency. It also makes river basin and regional type surveys and investigations of the watersheds of rivers and other waterways in cooperation with other Federal, State and local agencies. The Service also participates in interagency coordination activities in connection with the water and related land resource programs of States and other Federal agencies.

The Forest Service is responsible for installing planned forestry phases of the watershed protection program in national forests and on other lands administered by the Forest Service in authorized watersheds. It also furnishes certain specialized technical assistance on other forest lands in these watersheds and participates in river basin and regional type surveys and investigations of watersheds of rivers and other waterways.

The Economic Research Service makes special economic analyses of specific watershed projects and participates in river basin and regional type surveys and investigations of watersheds of rivers and other waterways.

Farmers Home Administration has responsibility for administration of Sections 4 and 8 of the Act as they relate to loans and advances to local organizations.

The Agricultural Research Service carries out trap efficiency studies to determine water and sediment outflow from reservoirs for use in design of floodwater retarding structures.

The Department of the Interior's Bureau of Land Management and Bureau of Indian Affairs participate in the installation of works of improvement on lands under their jurisdiction.

Funds are also made available to the U. S. Weather Bureau and the U. S. Geological Survey, either by transfer or reimbursement, for precipitation and runoff data used in program evaluation and design of structural works of improvement.

Selected Examples of Recent Progress:

WATERSHED WORKS OF IMPROVEMENT

Agency Participation

The following table shows the amount of funds obligated for installation of watershed works of improvement in 1965 and estimates for 1966 and 1967 under allotments and allocations to cooperating agencies of the Department of Agriculture and Department of the Interior on a projected available funds basis.

Agency	: 1965	: 1966	: 1967
	: Obligations	: Estimate	: Estimate
Soil Conservation Service:	:	:	:
Pilot Watersheds	: \$765,659 ^{a/}	: \$406,200	: \$372,000
P.L. 566 Watersheds	: 54,219,476 ^{b/}	: 58,452,267	: 55,383,600
Economic Research Service:	:	:	:
Pilot Watersheds	: 31,000	: 31,700	: 32,000
P.L. 566 Watersheds	: 93,000	: 95,100	: 96,000
Forest Service:	:	:	:
Pilot Watersheds	: 7,575	: 2,000	: 2,000
P.L. 566 Watersheds	: 394,845	: 1,066,200	: 656,000
Bureau of Indian Affairs:	:	:	:
P.L. 566 Watersheds	: 24,499	: 22,000	: 22,000
Bureau of Land Management:	:	:	:
P.L. 566 Watersheds	: 1,472	: 7,000	: 7,000
U. S. Geological Survey:	:	:	:
P.L. 566 Watersheds	: 63,871	: 74,400	: 74,400
Total, Pilot Watersheds	: 804,234	: 439,900	: 406,000
Total, P.L. 566 Watersheds	: 54,797,163	: 59,716,967	: 56,239,000
Grand Total	: 55,601,397	: 60,156,867	: 56,645,000

^{a/} Includes \$53,710 for reimbursable work performed by the U. S. Geological Survey, \$6,505 for U. S. Weather Bureau, and \$1,877 for Agricultural Research Service for project evaluation studies, special studies and basic data collection in 1965.

^{b/} Includes \$5,000 for reimbursable work performed by the Agricultural Research Service, \$14,784 for U. S. Geological Survey and \$85,000 for U. S. Weather Bureau, for basic data collection, special studies and project evaluation studies.

Status of "Pilot" Watershed Projects

Sixty-two "Pilot" watersheds were started in the fiscal year 1954 in cooperation with local sponsors under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f) to demonstrate and evaluate the effectiveness of works of improvement installed in small watersheds for watershed protection and flood prevention purposes. As of June 30, 1965, work had been discontinued in eight projects and completed as planned in 49 except for project evaluation studies which will be underway until 1970 in some of these. The total Federal cost of the pilot projects, including the eight that were discontinued before completion at the request of the local sponsors, is currently estimated at \$43.6 million, excluding the cost of project evaluation studies subsequent to the fiscal year 1959, which is estimated at \$1,384,773.

The following table shows the current status of the "pilot" watershed projects. Obligations for project evaluation studies are not reflected in the table subsequent to the fiscal year 1959. Such costs were determined not properly allocable to the individual projects at that time.

Explanation	: 1965 Actual		: 1966 Estimate		: 1967 Estimate	
	: Amount		: Amount		: Amount	
	: Num- (Thou-		: Num- (Thou-		: Num- (Thou-	
	: ber : sands)		: ber : sands)		: ber : sands)	
Uncompleted projects at beginning of year and estimated completion cost	: 6	: 1,343	: 5	: 642	: 1	: 304
Status of projects and amounts obligated:						
1. Projects completed during the year	: 1	: 62	: 4	: 242	: 1	: 304
2. Projects continuing construction and land treatment	: 5	: 639	: 1	: 96	: -	: -
Total	: 6	: 701	: 5	: 338	: 1	: 304
3. Uncompleted projects at end of year:						
(a) Obligations to date ^{1/}	: 5	: 11,642	: 1	: 1,996	: -	: -
(b) Estimated completion cost	: 5	: 642	: 1	: 304	: -	: -
4. Projects completed (cumulative) and total cost	: 49	: 30,879	: 53	: 40,863	: 54	: 43,163
5. Projects discontinued (cumulative) and total cost	: 8	: 330	: 8	: 330	: 8	: 330
6. Total projects approved and estimated total cost	: 62	: 43,493	: 62	: 43,493	: 62	: 43,493
7. Total obligations (cumulative) ..	: -	: 42,851	: -	: 43,189	: -	: 43,493
	: :		: :		: :	

^{1/} Includes \$1,264,860 for project evaluation studies charged to project costs prior to the fiscal year 1960.

One pilot project was completed in 1965 - - Twelve Mile Creek, South Carolina. It is expected that four additional projects - - Chippewa River Tributaries, Minnesota; Third Creek, North Carolina; Upper Salt Swedeburg Tributaries, Nebraska; and Walnut Creek, California will be completed in 1966. This will leave only Cow Bayou in Texas in operations in 1967. This project is expected to be completed by the end of that year.

Project Evaluation Studies on Pilot Watersheds

Some evaluation studies have been carried out in all of the pilot watershed projects in which works of improvement were installed. This includes trap efficiency studies to determine water and sediment outflow from reservoirs. As of June 30, 1965, out of a total of \$43,730,888 obligated for the pilot watershed program \$2,144,720 was for project evaluation studies. It has been determined advisable to continue these studies at least through the fiscal year 1970 in about 10 key projects. These studies are to obtain data over a sufficient period of time to provide a reliable long-range appraisal of the effectiveness of works of improvement installed under the watershed protection program, and to secure facts needed to improve design of watershed structures. The total estimated cost of evaluation studies is shown in the following table:

<u>Explanation</u>	<u>Amount</u>
Obligations included in project costs through June 30, 1959	\$1,264,860
Obligations from July 1, 1959, through June 30, 1965	879,860
Obligations estimated for fiscal year 1966	102,000
Obligations estimated for fiscal year 1967	102,000
Obligations estimated July 1, 1967, through June 30, 1970	<u>300,913</u>
Total estimated obligations for evaluation studies	<u>2,649,633</u>

Installation Progress in "Pilot" Projects

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for installation of works of improvement in "pilot" projects:

State	Number : Projects : Approved	Watershed : Area : (Acres)	Total : Estimated : Federal : Cost	% : Federal : Cost to : Total : Cost	Total : Cumulative : Federal : Obligations : to 6/30/65	% Federal : Cost : Obligated : as of : 6/30/65
Arizona	1	59,136	\$213,507	49.4	\$213,507	100.0
Arkansas	1	164,627	2,322,493	53.8	2,322,493	100.0
California	3 a/	332,815	8,345,528	47.1	8,327,989	99.8
Colorado	1	75,560	989,222	77.6	989,222	100.0
Georgia	1	40,598	1,050,195	62.6	1,050,195	100.0
Idaho	1 a/	42,880	101,759	80.5	101,759	100.0
Illinois	3 a/	100,885	1,279,245	76.4	1,279,245	100.0
Indiana	1	36,632	161,824	55.5	161,824	100.0
Iowa	3	31,673	742,237	61.3	742,237	100.0
Kansas	6 a/	83,354	1,378,157	62.9	1,378,157	100.0
Kentucky	4	87,665	1,759,520	59.5	1,759,520	100.0
Minnesota	2	606,488	3,195,506	57.0	3,170,506	99.2
Missouri	2	22,961	870,113	67.6	870,113	100.0
Montana	1 a/	- -	8,622	100.0	8,622	100.0
Nebraska	4	212,884	3,541,239	63.1	3,438,239	97.1
New Hampshire .	1	30,555	52,466	51.5	52,466	100.0
New Jersey	1	69,120	834,870	69.1	834,870	100.0
New Mexico	2	265,350	792,843	67.7	792,843	100.0
New York	4 a/	77,269	936,226	81.0	936,226	100.0
North Carolina .	1	66,167	903,000	50.5	736,347	81.5
North Dakota ..	1	295,575	3,136,854	77.8	3,136,854	100.0
Ohio	2 a/	59,460	1,753,445	78.0	1,753,445	100.0
Oklahoma	1	30,894	450,486	60.6	450,486	100.0
Pennsylvania ..	1	15,425	65,153	36.0	65,153	100.0
South Carolina .	1	67,346	1,213,748	59.4	1,213,748	100.0
South Dakota ..	1	2,900	140,108	81.7	140,108	100.0
Tennessee	1	14,900	664,804	65.8	664,804	100.0
Texas	4	274,770	4,884,901	51.0	4,555,093	93.2
Utah	2	48,482	584,367	77.1	584,367	100.0
Virginia	1	42,706	283,647	59.0	283,647	100.0
Washington	2 a/	53,080	344,042	98.3	344,042	100.0
West Virginia .	1	5,325	346,958	80.9	346,958	100.0
Wisconsin	1	5,800	145,943	79.9	145,943	100.0
Subtotal	62	3,323,282	43,493,028	58.7	42,851,028	98.5
Project evaluation studies b/			1,384,773		879,860	
Total obligations			44,877,801		43,730,888	

a/ Includes one project which was discontinued before completion at the request of the sponsors.

b/ Obligations for evaluation studies subsequent to 6/30/59. Prior to the fiscal year 1960, a total of \$1,264,860 of evaluation costs was charged to projects.

Status of "P.L. 566" Watershed Projects

After watershed work plans have been prepared by sponsoring local organizations with the Department's assistance or with their own resources, and the work plans have been approved by the Department or the Congress as suitable for Federal participation, technical and financial assistance is provided for installation of works of improvement specified in the work plans. On non-Federal lands local sponsoring organizations (1) provide land, easements, and rights-of-way for planned structural measures except that the Federal government may pay up to one-half of these costs allocated to public fish and wildlife and recreational development; (2) contract for construction work; (3) operate and maintain the completed structural measures and (4) bear a share of construction costs for multi-purpose structural measures. Federal agencies do this work on Federal lands which they administer.

Land treatment and engineering services must be furnished to all approved projects before they are advanced to the construction stage. During this stage, surveys and investigations are made and detailed designs, specifications, and engineering cost estimates are prepared for construction of structural measures. Areas are delineated where easements are required and technical assistance is furnished to operators and landowners to accelerate planning and application of conservation land treatment measures called for in the watershed work plan.

The project construction stage begins with the execution of the first project agreement for construction of works of improvement. Under a project agreement the sponsoring local organization agrees to construct a segment of the project which may consist of an individual or interrelated group of structures.

The project agreement obligates the government and the sponsoring local organization to share the construction costs as agreed to in the work plan. Payments are made to the contracting local organization in accordance with the project agreement as the work progresses. Engineering and other services are provided for the preparation of contracts and inspection of construction. Technical assistance in planning and installing conservation land treatment measures is continued as agreed upon in the watershed work plan.

In the fiscal year 1965, 66 projects were approved for operations and 59 projects were moved into the construction stage. This brought to 635 the total number of projects approved for operations as of June 30, 1965. Sixty-six of these projects were completed prior to 1965. Of the 569 projects in operations in 1965, 195 were receiving land treatment and engineering services only and 350 were in construction. Seventeen of the latter were completed in 1965. Twenty-four of the approved projects did not require Federal funds during the fiscal year 1965 because of project inactivity, approval late in the fiscal year, or having no work scheduled for that year.

Projected "P. L. 566" Project Activity

The following tabulation shows the status of Public Law 566 projects by stage of assistance and amounts obligated or estimated to be obligated. The table does not reflect minor obligations for project evaluation studies. (\$147,207) cumulative as of 6/30/65, or for balances remaining in the undistributed equipment account (\$412,955 cumulative to 6/30/65) which had not been distributed to projects.

Explanation	: 1965 Actual		: 1966 Estimate		: 1967 Estimate	
	: Amount		: Amount		: Amount	
	: Num-: (Thou-		: Num-: (Thou-		: Num-: (Thou-	
	: ber : sands)		: ber : sands)		: ber : sands)	
1. Projects approved for operations:	:	:	:	:	:	:
and estimated cost of comple-	:	:	:	:	:	:
tion:	:	:	:	:	:	:
(a) Uncompleted projects at	:	:	:	:	:	:
beginning of year	:503	: \$374,639	:552	: \$376,772	:627	: \$422,055
(b) Projects approved during	:	:	:	:	:	:
year	:66	: 56,914	:105	: 105,000	:120	: 120,000
Total	:569	: 431,553	:657	: 481,772	:747	: 542,055
2. Status of projects and amounts	:	:	:	:	:	:
obligated:	:	:	:	:	:	:
(a) Projects not requiring	:	:	:	:	:	:
funds during year	:24	: - -	:24	: - -	:24	: - -
(b) Projects receiving land	:	:	:	:	:	:
treatment and engineering	:	:	:	:	:	:
services only	:195	: 3,065	:240	: 4,514	:358	: 6,802
(c) Projects moved into con-	:	:	:	:	:	:
struction stage during	:	:	:	:	:	:
year	:59	: 13,506	:80	: 18,565	:35	: 8,143
(d) Prior year projects con-	:	:	:	:	:	:
tinuing construction and	:	:	:	:	:	:
land treatment	:291	: 38,210	:313	: 36,638	:330	: 41,294
(Projects included above	:	:	:	:	:	:
completed during year) .	:(17):	:(33)	:(30)	:(271)	:(40)	:(200)
Total	:569	: 54,781	:657	: 59,717	:747	: 56,239
3. Uncompleted projects (cumulative)	:	:	:	:	:	:
at end of year:	:	:	:	:	:	:
(a) Obligations to date	:552	: 248,421	:627	: 296,694	:707	: 335,823
(b) Estimated cost of	:	:	:	:	:	:
completion	:552	: 376,772	:627	: 422,055	:707	: 485,816
4. Projects completed (cumulative)	:	:	:	:	:	:
and total cost	:83	: 23,926	:113	: 35,370	:153	: 52,480
5. Total projects approved (cumula-	:	:	:	:	:	:
tive) and estimated total cost:	:635	: 649,119	:740	: 754,119	:860	: 874,119
6. Total obligations (cumulative)	: - -	: 272,347	: - -	: 332,064	: - -	: 388,303

Installation Progress in "P.L. 566" Projects

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for the installation of works of improvement in P.L. 566 watersheds. On the line with the name of the State there is shown information concerning projects wholly within a State. Data for interstate projects are listed on separate lines. Those identified with the letter A identify interstate projects for which the State has primary responsibility. Letter B identifies interstate projects for which other States have primary administrative responsibility. Only the applicable portion of an interstate project is included in a State.

State	: : Number : Projects : Approved : 6/30/65:	: : Total : Watershed : Area : (Acres):	: : Total : Estimated : Federal : Cost	: : % : Federal : Cost to : Total : Cost	: : Total : Cumulative : Federal : Obligations : 6/30/65	: : % Federal : Cost : Obligated : as of : 6/30/65
Alabama	: 15	: 846,076	: 16,056,842	: 68.5	: 3,461,255	: 21.6
A-interstate	: 2	: 191,548	: 1,937,460	: 64.1	: 1,278,182	: 66.0
B-interstate	: (1)	: 6,000	: 226,751	: 64.0	: 215,198	: 95.9
Total, Ala.	: 17	: 1,043,624	: 18,221,053	: 68.0	: 4,954,635	: 27.2
Arizona	: 7	: 721,921	: 22,580,170	: 67.2	: 4,826,639	: 21.4
Arkansas	: 27	: 1,246,312	: 27,526,068	: 63.6	: 12,565,214	: 45.6
California	: 9	: 577,990	: 33,423,787	: 66.9	: 16,420,445	: 49.1
Colorado	: 11	: 539,258	: 5,118,558	: 61.4	: 3,809,497	: 74.4
Connecticut	: 5	: 56,466	: 11,214,763	: 60.5	: 5,665,497	: 50.5
A-interstate	: 2	: 52,274	: 2,426,059	: 52.2	: 1,564,288	: 64.5
Total, Conn. ..	: 7	: 108,740	: 13,640,822	: 58.9	: 7,229,785	: 53.0
Delaware	: 2	: 124,298	: 2,573,217	: 50.9	: 1,398,896	: 54.4
A-interstate	: 1	: 60,360	: 2,997,415	: 66.1	: 11,076	: 0.4
Total, Delaware	: 3	: 184,658	: 5,570,632	: 58.1	: 1,409,972	: 25.3
Florida	: 11	: 634,350	: 8,273,256	: 40.1	: 3,520,295	: 42.6
A-interstate	: 1	: 55,600	: 236,697	: 53.1	: 181,938	: 76.9
Total, Fla.	: 12	: 689,950	: 8,509,953	: 40.4	: 3,702,233	: 43.5
Georgia	: 33	: 1,650,788	: 27,511,805	: 58.7	: 11,699,461	: 42.5
B-interstate	: (2)	: 9,266	: 7,750	: 15.0	: 3,727	: 48.1
Total, Ga.	: 33	: 1,660,054	: 27,519,555	: 58.7	: 11,703,188	: 42.5
Hawaii	: 4	: 43,350	: 7,729,930	: 65.9	: 3,879,912	: 50.2
Idaho	: 4	: 213,120	: 2,376,524	: 59.8	: 746,625	: 31.4
Illinois	: 9	: 382,664	: 6,556,782	: 51.8	: 2,127,906	: 32.5
Indiana	: 16	: 755,759	: 16,651,401	: 58.1	: 5,412,296	: 32.5
Iowa	: 26	: 376,595	: 13,981,364	: 76.2	: 5,144,654	: 36.8
Kansas	: 18	: 1,165,492	: 26,190,225	: 81.2	: 13,631,427	: 52.0
A-interstate	: 1	: 219,000	: 4,339,900	: 81.2	: 371,484	: 8.6
Total, Kans. ..	: 19	: 1,384,492	: 30,530,125	: 81.2	: 14,002,911	: 45.9
Kentucky	: 22	: 1,661,239	: 24,380,164	: 47.7	: 9,988,619	: 41.0
A-interstate	: 1	: 189,019	: 1,295,346	: 34.9	: 583,482	: 45.0
B-interstate	: (2)	: 16,543	: 150,143	: 52.6	: 37,219	: 24.8
Total, Ky.	: 23	: 1,866,801	: 25,825,653	: 46.9	: 10,609,320	: 41.1
Louisiana	: 13	: 832,601	: 7,741,338	: 40.5	: 5,161,033	: 66.7
Maine	: 2	: 142,568	: 1,664,610	: 70.5	: 446,691	: 26.8

State	: Number :	: Total : Projects : Watershed : Approved : Area : 6/30/65 : (Acres) :	: Total : Estimated : Federal : Cost : Cost :	: % : Federal : Cost to : Total : Obligations : Cost : 6/30/65 :	: Total : Cumulative : Federal : Obligations : as of 6/30/65 :	: % Federal : Cost : Obligated : as of 6/30/65 :
Maryland	: 10 :	: 165,476 :	: 4,965,038 :	: 64.3 :	: 3,496,225 :	: 70.4 :
B-interstate	: (1) :	: 40,240 :	: 1,825,820 :	: 67.7 :	: 16,845 :	: 0.9 :
Total, Md.	: 10 :	: 205,716 :	: 6,790,858 :	: 65.1 :	: 3,513,070 :	: 51.7 :
Massachusetts	: 7 :	: 385,538 :	: 5,763,804 :	: 69.3 :	: 2,181,316 :	: 37.8 :
B-interstate	: (2) :	: 10,600 :	: 111,277 :	: 66.1 :	: 110,409 :	: 99.2 :
Total, Mass. ..	: 7 :	: 396,138 :	: 5,875,081 :	: 69.3 :	: 2,291,725 :	: 39.0 :
Michigan	: 11 :	: 380,810 :	: 3,973,469 :	: 31.3 :	: 2,605,030 :	: 65.7 :
Minnesota	: 10 :	: 698,544 :	: 3,522,631 :	: 47.7 :	: 1,223,763 :	: 34.7 :
Mississippi	: 20 :	: 1,339,072 :	: 22,946,166 :	: 56.3 :	: 8,696,487 :	: 37.9 :
A-interstate	: 1 :	: 67,060 :	: 1,708,929 :	: 66.5 :	: 433,509 :	: 25.4 :
B-interstate	: (2) :	: 13,920 :	: 395,941 :	: 69.6 :	: 331,123 :	: 83.6 :
Total, Miss. ..	: 21 :	: 1,420,052 :	: 25,051,036 :	: 57.0 :	: 9,461,119 :	: 37.8 :
Missouri	: 10 :	: 349,696 :	: 7,524,570 :	: 57.9 :	: 3,842,561 :	: 51.1 :
Montana	: 3 :	: 88,208 :	: 782,405 :	: 58.8 :	: 696,942 :	: 89.1 :
Nebraska	: 22 :	: 979,934 :	: 19,201,618 :	: 59.9 :	: 6,033,164 :	: 31.4 :
Nevada	: 3 :	: 208,600 :	: 1,270,723 :	: 69.0 :	: 1,195,324 :	: 94.1 :
New Hampshire	: 4 :	: 269,000 :	: 5,056,544 :	: 72.3 :	: 1,346,720 :	: 26.6 :
New Jersey	: 8 :	: 176,156 :	: 2,888,956 :	: 66.8 :	: 2,315,274 :	: 80.1 :
New Mexico	: 18 :	: 782,247 :	: 5,324,182 :	: 84.1 :	: 4,491,711 :	: 84.4 :
New York	: 8 :	: 531,813 :	: 9,462,475 :	: 69.2 :	: 2,682,383 :	: 28.3 :
North Carolina	: 26 :	: 995,229 :	: 16,181,096 :	: 53.8 :	: 5,787,873 :	: 35.8 :
North Dakota	: 8 :	: 1,238,200 :	: 7,258,012 :	: 55.0 :	: 3,150,174 :	: 43.4 :
A-interstate	: 1 :	: 63,195 :	: 810,906 :	: 67.9 :	: 620,786 :	: 76.6 :
B-interstate	: (1) :	: 158,182 :	: 224,596 :	: 25.2 :	: 18,385 :	: 8.2 :
Total, N. D. ..	: 9 :	: 1,459,577 :	: 8,293,514 :	: 54.3 :	: 3,789,345 :	: 45.7 :
Ohio	: 8 :	: 496,822 :	: 12,386,819 :	: 68.7 :	: 3,272,542 :	: 26.4 :
Oklahoma	: 36 :	: 3,780,859 :	: 68,289,102 :	: 57.5 :	: 29,934,758 :	: 43.8 :
B-interstate	: (1) :	: 9,000 :	: 123,600 :	: 94.0 :	: 7,100 :	: 5.7 :
Total, Okla. ..	: 36 :	: 3,789,859 :	: 68,412,702 :	: 57.5 :	: 29,941,858 :	: 43.8 :
Oregon	: 7 :	: 164,546 :	: 6,205,842 :	: 58.7 :	: 3,600,645 :	: 58.0 :
Pennsylvania	: 16 :	: 641,453 :	: 16,144,050 :	: 64.5 :	: 5,393,167 :	: 33.4 :
A-interstate	: 1 :	: 13,350 :	: 1,086,200 :	: 85.9 :	: 988 :	: 0.1 :
Total, Pa.	: 17 :	: 654,803 :	: 17,230,250 :	: 65.5 :	: 5,394,155 :	: 31.3 :
Puerto Rico	: 3 :	: 252,002 :	: 9,506,522 :	: 68.4 :	: 321,473 :	: 3.4 :
South Carolina	: 14 :	: 419,151 :	: 6,163,787 :	: 57.2 :	: 2,691,642 :	: 43.7 :
South Dakota	: 8 :	: 379,287 :	: 5,276,661 :	: 63.9 :	: 1,270,033 :	: 24.1 :
A-interstate	: 1 :	: 75,340 :	: 772,048 :	: 65.1 :	: 770,526 :	: 99.8 :
B-interstate	: (1) :	: 30,587 :	: 20,043 :	: 23.0 :	: 17,518 :	: 87.4 :
Total, S. D. ..	: 9 :	: 485,214 :	: 6,068,752 :	: 63.7 :	: 2,058,077 :	: 33.9 :
Tennessee	: 18 :	: 698,421 :	: 24,344,032 :	: 76.9 :	: 8,195,203 :	: 33.7 :
A-interstate	: 4 :	: 159,127 :	: 5,465,483 :	: 74.7 :	: 1,953,562 :	: 35.7 :
B-interstate	: (2) :	: 26,157 :	: 478,812 :	: 56.6 :	: 209,703 :	: 43.8 :
Total, Tenn. ..	: 22 :	: 883,705 :	: 30,288,327 :	: 76.0 :	: 10,358,468 :	: 34.2 :

State	: Number :	: Total : : Projects: Watershed: : : Approved: Area : : 6/30/65: (Acres) :	: Total : : Estimated : : Federal : : Cost :	: % : : Federal: : : Cost to: : : Total : : Cost :	: Total : : Cumulative: : : Federal : : Obligations: : : 6/30/65 :	: % Federal : : Cost : : Obligated : : as of : : 6/30/65 :
Texas	: 43 :	: 3,897,703 :	: 57,917,858 :	: 63.1 :	: 27,501,416 :	: 47.5 :
Utah	: 7 :	: 555,621 :	: 5,472,877 :	: 51.8 :	: 3,328,127 :	: 60.8 :
Vermont	: 2 :	: 18,875 :	: 1,528,644 :	: 85.3 :	: 31,637 :	: 2.1 :
Virginia	: 15 :	: 744,710 :	: 8,821,280 :	: 56.8 :	: 3,795,424 :	: 43.0 :
Washington	: 7 :	: 89,414 :	: 7,122,267 :	: 69.3 :	: 5,332,726 :	: 74.9 :
West Virginia	: 11 :	: 116,604 :	: 5,119,582 :	: 64.7 :	: 3,142,286 :	: 61.4 :
B-interstate	: (1) :	: 11,000 :	: 775,800 :	: 92.4 :	: 630 :	: 0.1 :
Total, W. Va. .	: 11 :	: 127,604 :	: 5,895,382 :	: 67.3 :	: 3,142,916 :	: 53.3 :
Wisconsin	: 15 :	: 596,101 :	: 7,733,600 :	: 71.3 :	: 4,670,106 :	: 60.4 :
Wyoming	: 7 :	: 360,435 :	: 1,996,644 :	: 51.5 :	: 1,476,641 :	: 74.0 :
Total Projects	: 635 :	: 35,248,742 :	: 649,119,036 :	: 61.2 :	: 272,346,813 :	: 42.0 :
Project Evaluation	: :	: :	: :	: :	: :	: :
studies	: :	: :	: 300,000 :	: :	: 147,207 :	: :
Undistributed	: :	: :	: :	: :	: :	: :
equipment cost ..	: :	: :	: :	: :	: 412,955 :	: :
Grand Total ...	: 635 :	: 35,248,742 :	: 649,419,036 :	: :	: 272,906,975 :	: :

Soil Surveys and Conservation Farm and Ranch Plans in Watershed Projects

(Pilot and P.L. 566 Watersheds)

Watershed Protection funds are used to accelerate soil surveys, planning and installation of conservation land treatment measures in watershed projects to the extent that assistance under other conservation programs falls short of meeting project objectives within the agreed upon installation period. The project work plans must include provision for such assistance. The following table shows the acres surveyed and conservation farm and ranch plans prepared in the 1965 fiscal year with Watershed Protection funds and estimates for 1966 and 1967:

Item	: 1965 : : Actual :	: 1966 : : Estimate :	: 1967 : : Estimate :
Soil surveys (acres)	: 984,227 :	: 1,060,000 :	: 1,000,000 :
Total number cooperators	: 4,348 :	: 4,700 :	: 4,400 :
Basic conservation plans prepared:	: :	: :	: :
Number	: 4,991 :	: 5,400 :	: 5,100 :
Acres	: 849,196 :	: 910,000 :	: 860,000 :
	: :	: :	: :

The following table shows the acres surveyed and conservation plans prepared cumulative through June 30, 1965 with both Watershed Protection and Conservation Operations funds in the six pilot and 569 P.L. 566 projects in operation in 1965.

Item	: Watershed : : Protection : : Funds :	: Conservation : : Operations : : Funds :	: Grand : : Total : : in Projects :
Soil surveys (acres)	: 6,613,321 :	: 19,224,615 :	: 25,837,936 :
Total number cooperators	: 28,549 :	: 84,051 :	: 112,600 :
Basic conservation plans prepared:	: :	: :	: :
Number	: 28,634 :	: 67,131 :	: 95,765 :
Acres	: 4,667,806 :	: 13,454,427 :	: 18,122,233 :
	: :	: :	: :

Works of Improvement Installed in Watershed Projects

(Pilot and P.L. 566 Watersheds)

The following table shows the number of operating Pilot and Public Law 566 projects and works of improvement installed in these projects in the fiscal year 1965 and cumulative accomplishments in these watersheds under all programs as of June 30, 1965:

Works of Improvement	Unit	Installed in 1965			Est. 6/30/65 of total practices "On the Land" <u>1/</u>
		Watershed Pro-tection Program	with assistance under	Other Programs	
1. Projects in operation during year:					
a. Pilot watersheds	No.	6	-	-	-
b. P.L. 566 watersheds	No.	569	-	-	-
2. Works of improvement installed:					
a. <u>Structural measures:</u>					
Floodwater Retarding					
Structures	No.	247	6		1,437
Grade Stabilization Structures <u>2/</u>	No.	375	257		6,239
Channel Stabilization	Miles	-	-		46
Channel Improvement	Miles	456	17		1,567
Debris Basins <u>2/</u>	No.	181	26		6,491
Diversion Dams	No.	5	2		106
Multi-purpose Dams	No.	12	2		104
Dikes and Levees <u>2/</u>	Miles	18	1		326
Critical Area Planting <u>2/</u> ...	Acres	4,856	5,572		93,919
b. <u>Land treatment measures:</u>					
Brush and Weed Control	Acres	157,728	210,581		1,193,254
Conservation Cropping System	Acres	475,963	674,768		5,316,822
Contour Farming	Acres	78,180	159,576		1,873,322
Cover and Green Manure Crops	Acres	120,543	161,696		1,300,830
Crop Residue Use	Acres	446,084	645,889		3,890,445
Ditch Bank Seeding	Miles	91	85		897
Diversions	Miles	21	123		4,069
Drainage Field Ditches	Miles	199	322		7,820
Drainage Mains or Laterals ..	Miles	102	326		8,976
Farm Ponds	No.	309	2,238		68,112
Field Border Planting	Miles	26	17		1,014
Grassed Waterways or Outlets	Acres	3,421	2,084		70,637
Hydrologic Stand Improvement	Acres	65,412	3/		278,911
Irrigation Ditch and Canal					
Lining	Miles	5	38		920
Irrigation Water Management .	Acres	20,287	61,484		296,878
Land Clearing	Acres	18,322	29,046		419,363
Pasture and Hayland Renovation	Acres	42,340	52,477		815,709
Pasture and Hayland Planting ..	Acres	61,819	79,848		2,282,121
Pasture Proper Use	Acres	261,480	298,953		1,524,459

	:	:	Installed in 1965	:	:
	:	:	with assistance under:	Est. 6/30/65	o?
Works of Improvement	:Unit	:Watershed Pro-	: Other	:total practices	
	:	:tection Program:	Programs:	"On the Land"	<u>1/</u>
Pumping Plant for Water	:	:	:	:	
Control	: No. :	45	: 33	:	1,382
Range Deferred Grazing	:Acres:	171,184	:203,229	:	977,448
Range Proper Use	:Acres:	459,113	:541,340	:	3,342,509
Range Seeding	:Acres:	4,788	: 12,267	:	202,279
Rotation Grazing	:Acres:	141,149	:142,172	:	653,832
Spoilbank Spreading	:Miles:	291	: 288	:	6,413
Stripcropping	:Acres:	7,822	: 7,961	:	292,633
Structures for Water Control	: No. :	1,027	: 4,212	:	77,675
Stubble Mulching	:Acres:	9,212	: 16,026	:	118,556
Skid Trail and Logging Road	:	:	:	:	
Erosion Control	:Miles:	65	: 3/	:	123
Terraces, Basin	:Miles:	- -	: 6	:	57
Terraces, Gradient	:Miles:	262	: 887	:	44,802
Terraces, Level	:Miles:	16	: 176	:	6,973
Terraces, Parallel	:Miles:	32	: 306	:	1,404
(Total Terraces)	:Miles:	(310)	: (1,375)	:	(53,236)
Tile Drains	:Miles:	108	: 483	:	9,703
Tree Planting	:Acres:	15,874	: 9,572	:	310,574
Troughs or Tanks	: No. :	93	: 232	:	6,579
Wells	: No. :	80	: 124	:	7,526
Wildlife Preservation	:Acres:	16,339	: 34,587	:	276,217
Wildlife Development	:Acres:	2,834	: 1,885	:	176,685
Woodland Proper Grazing	:Acres:	5,195	: 24,858	:	60,782
Woodland Harvest Cutting	:Acres:	8,581	: 8,770	:	337,754
Woodland Intermediate Cutting	:Acres:	8,216	: 10,346	:	256,159
Woodland Planting	:Acres:	683	: 1,512	:	47,129
Woodland Thinning	:Acres:	1,910	: 2,006	:	52,845
Woodland Weeding	:Acres:	3,324	: 3,515	:	135,500
	:	:	:	:	
c. Forest fire control:	:	:	:	:	
Heliports and Helispots	: No. :	- -	: 3/	:	17
Mobile Equipment	: No. :	- -	: 3/	:	13
Water Developments	: No. :	- -	: 3/	:	- -
Fire Towers	: No. :	- -	: 3/	:	8
Other Structures	: No. :	- -	: 3/	:	16
Fire Control Roads, Trails	:	:	:	:	
and Firebreaks	:Miles:	74	: 3/	:	159
Radio Installations	: No. :	2	: 3/	:	43
	:	:	:	:	

1/ Accomplishments under all programs.

2/ Includes some accomplishments as land treatment.

3/ Data not available.

Project Installations Providing Protection

Planned installations of conservation land treatment and structural measures for watershed protection and flood prevention had been completed in 83 PL 566 projects as of June 30, 1965, and construction was underway in 350 other projects. The measures installed are proving their effectiveness in reducing floodwater, erosion, and sediment damages as evidenced by the following two typical examples:

1. Colorado - Franktown-Parker Watershed Project: This 176,640 acre watershed was authorized for operations August 31, 1960, and is scheduled for completion in November 1965. The sponsors are Douglas County Soil Conservation District and Douglas and El Paso Counties. The land use is 11 percent cropland, 71 percent grassland, 11 percent forest and brush, and 9 percent miscellaneous uses. The major problems are floodwater, sediment and erosion damage to flood plains along with damages to roads, bridges, fences, cropland and the Town of Parker.

Approximately 70 percent of the land treatment measures had been applied as of June 30, 1965. Of the 161 operating units in the watershed, 97 are district cooperators, 75 of which have developed basic conservation plans. Eighteen of the 23 floodwater retarding structures planned had been completed on June 30, 1965, and the other 5 were under construction. All easements valued at approximately \$31,600 have been obtained. Five of the completed structures proved their effectiveness in controlling floodwaters from two severe storms, one in August 1964, and another in June 1965. The flood water held behind the structures dissipated the major crest before it joined floodwaters from other tributaries downstream. It was estimated that these five structures prevented damages to homes, highways, bridges, fences, livestock and cropland in excess of \$245,000.

The County Commissioners of Douglas County, the Castle Rock Town Council, conservation district supervisors and many others expressed their approval of the completed structures and land treatment measures that effectively prevented extensive flood damages from these two severe storms.

2. Kentucky - West Fork of Clarke River Watershed Project: Operations began on this 148,640 acre watershed project on June 30, 1960. The project is scheduled for completion by the end of fiscal year 1970 at a Federal cost of \$2,022,110 and local cost of \$2,660,000. The project is sponsored by the Calloway, Graves, Marshall and McCracken Soil Conservation districts and the Clarke River Conservation District. The major problems are floodwater and sediment damage to agricultural land. The land use in the project consists of 60 percent cropland, 18 percent grassland, 14 percent woodland and 8 percent miscellaneous uses.

There are 2,065 farms in the watershed. Of this number 842 were district cooperators and 593 had developed basic conservation plans as of June 30, 1965. More than 65 percent of the planned land treatment measures have been applied. All planned critical area treatments have been completed. Approximately 50 percent of the floodwater retarding structures planned are complete or under construction and about 11 percent of the channel improvement is complete. Approximately 50 percent of the easements for floodwater retarding structures have been obtained.

Benefits from the project are substantial. One farmer stated that the house he and his family now occupy was abandoned for about 15 years due to floods. The uncertainty of crop production in the flood plain forced him to move his tobacco and corn plantings to hill land. Since the installation of the structure he is living in the old home again and has his tobacco and corn crops planted on each side of the creek.

The Graves County Fiscal Court stated, "Throughout our county, one of the largest expenses we have each year is due to floods washing out our roads and bridges. We no longer have this expense below the floodwater retarding structures. They offer more protection from floods than anything we ever had in the county." Land values in the area of completed structures has doubled in most cases, or is unobtainable due to its desirability for farming and home sites.

Local interest in recreation is high. Swimmers, campers, fishermen and picnickers use the facilities most of the year. Urban people are purchasing lots for building lake cabins or homes in order to be within a reasonable distance of their permanent residence.

Storage of water in the completed reservoirs has solved summer water shortages for many farmers. In some instances, water was provided for livestock that otherwise would have been moved elsewhere or sold at a sacrifice to an already flooded market.

Multi-purpose Watershed Projects Increasing

A greater percentage of the local sponsors of watershed projects are taking full advantage of the broadened opportunities offered under Public Law 566 to develop multi-purpose watershed projects which incorporate all needed features for economic and social development of rural communities.

More than 47 percent of the 635 projects approved for operations as of June 30, 1965, included structural measures with purposes other than flood prevention. This compares with 44 percent as of June 30, 1964, and 38 percent as of June 30, 1963. Of the 66 projects approved for operations during the fiscal year 1965, more than 65 percent included multi-purpose structural measures.

Of the 635 projects approved for operations as of June 30, 1965, 299 included structural measures incorporating one or more purposes other than flood prevention. Agricultural water management features were included in 190 projects, fish and wildlife developments in 52 projects, recreational developments in 70 projects, and municipal water supplies in 59 projects for a total of 371 purposes other than flood prevention in 299 multi-purpose projects.

The following sections give additional details and examples of the type of multi-purpose watershed projects currently underway in cooperation with sponsoring local organizations:

Projects Including Agricultural Water Management Features: One hundred and ninety of the 635 projects approved for operations as of June 30, 1965, included structural measures for agricultural water management in addition to flood prevention features. One hundred and fifty-one of these included drainage improvements on existing cropland and 39 included irrigation. Two typical examples of these projects where the local people are installing structural measures to develop, conserve, more efficiently utilize, and dispose of excess water supplies follow:

1. Utah - American Fork-Dry Creek Watershed Project: Operations began on this 118,710 acre watershed project on May 20, 1959. There are 12 sponsors of the project. The estimated total cost of the project is \$4,543,920, with the Federal share estimated to be \$2,312, 505.

Eleven jobs, consisting of 72,607 linear feet of concrete canal lining, 15,262 linear feet of pipelines, three water diversions and other appurtenant structures have been installed. Two other jobs of 15,200 linear feet of canal lining and 8,600 linear feet of pipeline are under construction. Installation of ditch lining and irrigation structures are well ahead of the acceleration plan.

Land treatment measures on Federal land are approximately 85 percent complete. Construction has been completed on Battle Creek, Grove Creek and Dry Creek Debris basins, and the Tibble Fork basin is under construction.

Canal lining is saving about one-fourth of the irrigation water, as well as a considerable amount of time in delivering water to the farms. The Grove Creek retarding structure was given its initial test in the spring of 1965 by a heavy snow melt runoff. In addition to trapping debris and equalizing day-night flow, excess flows were discharged into underground storage. The mayors of the towns of Pleasant Grove and Lehi have both praised the effectiveness of the completed structures. The mayor of Lehi stated that the structure had already paid for itself by its operation during the spring snow melt in 1964 and 1965, plus the recent summer flood.

2. Florida - Sebastian River Drainage District Project: This 33,930 acre project was authorized for operations on May 12, 1959 and is estimated to be completed by the end of the fiscal year 1966. The project is sponsored by the Sebastian River Drainage District and the Indian River Soil Conservation District. The principal problems in the watershed are floodwater damages to roads and bridges and overdrainage of farmlands in dry seasons. All of the farms are owner-operated. The land use is 5,410 acres of cropland (mainly citrus), 11,884 acres of grassland, 3,760 acres of woodland, and 12,876 acres of canals, roads and urban development.

More than 70 percent of the planned land treatment measures had been applied as of June 30, 1965. These measures relate primarily to management of water in citrus groves and pastureland and include ditches for drainage and irrigation, pumps and water control structures.

One of the two planned drop spillways with radial gates and 7.3 miles of channel improvement has been completed. Ninety-five percent of the easements have been obtained at a local cost of \$100,000.

A six-inch rainfall in twenty-four hours occurred in the area served by the completed channel improvements during a recent hurricane. No flood damages resulted. The completed drop spillway backs water seven miles up the channel at an average depth of six feet below ground level. This stabilizes the water table and furnishes a supplemental supply of irrigation water, with artesian wells being the main source. Citrus production has increased about 30 percent.

Watershed Projects Create New Water-Based Recreation Areas: Fifty-five developments to create or improve facilities for the enjoyment of outdoor recreation are being included in 50 small watershed projects as of July 1, 1965, under the recent amendment to Public Law 566 that allows the Federal Government to share costs on public recreation facilities. Similar developments without Federal cost sharing had been included in 20 other projects prior to enactment of this legislation. The 55 recent developments will add 17,800 surface acres of water and more than 5,000 acres of land to local public recreation facilities in 25 states when construction is complete.

The total cost of the public recreation developments is about \$18 million, with \$9.1 million coming from non-Federal sources. Local sponsoring organizations are responsible for operating and maintaining the reservoirs and recreation areas. It is estimated that the new recreation areas will attract 3 million visitors a year for boating, fishing, swimming, picnicking, camping, and allied forms of recreation, and will have a favorable economic impact on nearby communities.

Reservoirs providing additional storage for recreation are located in 25 States. Preliminary approval has been given to an additional 71 requests for assistance in developing recreation facilities in 56 watershed projects.

The Food and Agriculture Act of 1962 provided for USDA technical and financial help in developing recreation in watershed projects. The Federal Government may now share up to 50 percent of the cost of enlarging flood prevention dams for recreation purposes, obtaining land rights and rights-of-way and constructing minimum basic facilities such as boat docks, beaches, picnic areas and the like. The following two examples are typical of the fish and wildlife and recreational developments being installed as a part of watershed projects:

1. Georgia - Marbury Creek Watershed Project: Operations began on this 16,384 acre watershed project on July 25, 1962, and is scheduled for completion by the end of the fiscal year 1967. Approximately one-half of the city of Winder and all of Fort Yargo State Park are within the watershed. The project sponsors are the Oconee Soil Conservation District, Barrow County Government, the City of Winder and the Georgia Department of State Parks. The principal problems are floodwater and sediment damage to agricultural lands. All of the private lands (87 percent) are owner-operated. The land uses include 3,487 acres of cropland; 2,535 acres of pasture; 8,468 acres of woodland, and 1,904 acres of miscellaneous uses.

The application of land treatment measures is progressing according to schedule. More than 76 percent of the planned measures had been established as of June 30, 1965. There are 175 farmers in the watershed, of this number 154 are district cooperators and have developed basic conservation farm plans.

Two of the three planned floodwater retarding structures, one of which is multi-purpose for municipal and industrial water storage, and fish and wildlife, had been completed as of June 30, 1965. The remaining single purpose structure will be completed early in the fiscal year 1966. Four miles of channel improvement has also been completed and the remaining nine miles are under contract.

The land treatment measures established by the landowners since this watershed was organized has greatly improved the appearance and natural beauty of the community. The measures have also decreased the amount of silt going into Marbury Creek. The Georgia State Park Department is constructing a model park for recreation on a 2,000 acre tract of land in the watershed. The City of Winder has constructed a modern sewage disposal plant below the multi-purpose structure to prevent pollution of the stream by raw sewage. Dreams of a recreational park in this vicinity probably would never have been realized without this project.

2. Tennessee - Porters Creek Watershed Project: Operations began on this 37,000 acre watershed on April 8, 1960. The project is sponsored by the Porters Creek Watershed District and the Hardeman County Soil Conservation District. The principal problems in the watershed are floodwater and sediment damage to crops, pastures, and fixed improvements, and excessive erosion on the upland areas.

The land use consists of 8,522 acres of cropland, 5,557 acres of grassland and 12,226 acres of woodland. Ten percent of the farms are tenant operated.

There are 284 farms in the project, of this number, 202 were district cooperators and 156 had developed basic conservation plans as of June 30, 1965. Some of the needed land treatment measures, such as farm drainage, wildlife area planting, gully plugs and roadside treatment have been completed. The remaining seven practices needed are about 57 percent complete.

Six of the ten planned floodwater retarding structures had been completed as of June 30, 1965. The remaining four are scheduled for completion during the fiscal year 1966. The Tenn-Ark-Miss Girl Scout Council is co-sponsor of one of the floodwater retarding structures and paid the entire cost of the recreational features included in this structure which amounted to 59 percent of the total cost.

Landowners report that flooding below the completed structures has been reduced immensely in comparison to the flooding which would have occurred from similar storms prior to installation of the structures. The lakes created by the structures also provide an opportunity for water-based recreational facilities. Eight hundred user days were estimated during a three month period.

Projects Including Municipal Water Supply: The Watershed Protection and Flood Prevention Act, as amended, permits the inclusion of additional storage capacity in reservoirs constructed in watershed projects to satisfy present and future needs for municipal and industrial water supplies. Local organizations must pay the entire cost of construction, including engineering and other installation services for the additional capacity. However, advances may be made from construction funds to enable local organizations to pay for additional storage interest free up to a maximum of ten years or until the water is first used. Advances must be repaid with interest within the life of the structure but not to exceed 50 years from the time the water supply is first used. The opportunity to assure dependable future water supplies to small communities with the resultant increased chances of attracting industry is creating considerable interest in this feature of watershed project development. As of June 30, 1965, local sponsors in 59 watersheds had included municipal water supply features in their watershed work plans. Two examples of projects which include additional storage capacity for municipal water supply follow:

1. Virginia - Roanoke Creek Watershed Project: This project covering 141,900 acres of privately owned land was authorized for operations on September 2, 1959, and estimated to be completed in fiscal year 1965. The Southside Soil and Water Conservation District, Charlotte County Board of Supervisors, the Towns of Keysville, and Drakes Branch are sponsors of the project. The principal problems are flooding of valuable farm lands; flood damages to the Town of Drakes Branch and the railroad station, villages of Saxe and Randolph; swamping of other agricultural land and the need for additional water by the Towns of Drakes Branch and Keysville. The land use in the project consists of 31,942 acres of cropland, 12,941 acres grassland, 90,803 acres woodland, 4,240 acres idle and 1,974 acres in miscellaneous uses.

There are 853 farms in the watershed, of which 481 are district co-operators and 430 had developed basic conservation farm plans as of June 30, 1965. An estimated 65 percent of the planned land treatment measures had been applied as of June 30, 1965.

Seventeen structures, 95 miles of roadbank erosion control work and 56 miles of channel improvement are planned for this project. Eight floodwater retarding structures and two multi-purpose structures (one irrigation and one municipal water) had been completed as of June 30, 1965. Nineteen miles of channel work is complete. Additional structures and channel improvement is scheduled for completion during the fiscal year 1966.

The multi-purpose structure at Keysville is furnishing the town ample water. Virginia Crafts is enlarging their plant at Keysville which will provide employment for many more people. An adequate water supply made this expansion possible.

Flood protection of bottomland has resulted in land use adjustments enabling many farmers to retire erodible uplands to grass and trees and move intensive cropping to bottomlands. Several landowners having floodwater retarding structures on their farms are developing recreational facilities, particularly fishing.

2. Arkansas - Muddy Fork of Illinois River Watershed Project: This 47,122 acre project was authorized for operations June 29, 1961, and is scheduled for completion in fiscal year 1967. The Washington County Soil and Water Conservation District, Cities of Lincoln, and Prairie Grove, and the Arkansas Game and Fish Commission are sponsors for the project. The principal problems in the project are erosion, floodwater, and sediment damage to agricultural lands, and need for municipal water supply in the cities of Lincoln and Prairie Grove. Two percent of the farms are tenant operated. The land use in the watershed is 13,443 acres cropland, 16,577 acres grassland, and 15,556 acres woodland.

Approximately 80 percent of the planned land treatment measures had been completed as of June 30, 1965. There are 370 farmers in the watershed, of which, 336 are district cooperators and 295 of these have developed basic conservation farm plans. Estimated cost of land treatment measures is \$518,550.

Two of the four planned structures, had been completed as of June 30, 1965. One of these was a floodwater retarding structure and the other a multi-purpose structure including storage for fish and wildlife and municipal water supply.

The Washington County Soil and Water Conservation District, the cities and business men of Lincoln and Prairie Grove along with the Arkansas Game and Fish Commission obtained all land easements and rights-of-way at a cost of about \$120,000.

The City of Lincoln was in critical need of water prior to the completion of the multi-purpose structure. At times it was necessary to haul water from nearby towns to meet minimum needs. Water use was severely restricted and potential water using industries were discouraged from locating in the area. The city started using water from this structure in February 1964. Lincoln officials feel that the economy and growth potential has been enhanced by the new water supply. Plans are under way to extend their water lines to serve new areas. The mayor states that more new homes have been constructed during the past year than any other prior year.

P.L. 566 Watershed Projects In Appalachian Region

During the fiscal year 1965 seven new watersheds were approved for installation of land treatment and structural measures in the Appalachian region. As of October 1, 1965, 78 projects had been approved for operations, 18 of which had completed construction. Total Federal cost of these 78 projects is estimated at \$77.5 million. Initial project agreements for construction were signed by local sponsors of 10 projects in 1965 signalling actual start of construction in their projects. About \$6.5 million was obligated in P.L. 566 projects in Appalachia during the year. The following tabulation shows a breakdown by State of the number of projects approved for operations and the number with construction completed:

<u>State</u>	<u>Approved for Operation</u>	<u>Construction Completed</u>
1. Alabama	12	4
2. Georgia	15	4
3. Kentucky	1	1
4. Maryland	1	0
5. New York	7	0
6. North Carolina	6	0
7. Ohio	3	0
8. Pennsylvania	11	3
9. South Carolina	6	1
10. Tennessee	7	0
11. Virginia	1	1
12. West Virginia	8	4
Total Appalachian Region	78	18

LOANS AND RELATED EXPENSE

Loan Activities

Under Section 8 of Public Law 566, 83rd Congress, as amended, loans are authorized to be made to local organizations to help defray the local share of the cost of watershed protection projects. The Farmers Home Administration has been assigned responsibility for making loans under provisions of the Act to sponsors of watershed projects approved for operations. The law requires that all costs allocated to flood prevention purposes, except the cost of easements and rights-of-way, water rights, and administration of contracts, be paid from Federal funds. Most of the loans are for the local share of the cost of multi-purpose projects, organizational expenses, legal costs, and the acquisition of land, easements, and rights-of-way which the local organizations find they must purchase.

No loans are made under this authority for the local costs of installing land treatment measures primarily for watershed protection purposes. These land treatment measures primarily benefit the lands upon which they are installed, and the costs are normally borne by the individual landowners with some Federal cost-sharing and technical assistance from other Departmental conservation programs.

Applications for Loans

During the fiscal year 1965, 75 applications for watershed loans amounting to about \$15.0 million were received by the Farmers Home Administration. On June 30, 1965 there were 180 applications on hand totalling about \$35.2 million. It is estimated that about 100 applications will be received during fiscal year 1966 and that 241 applications totalling about \$47.5 million will be pending at the end of this year.

The following tabulation shows the status of the watershed protection loan program and amounts obligated or estimated to be obligated for loans to local sponsoring organizations of watershed projects. The table includes actual and estimated obligations from the \$3.1 million supplemental appropriation for watershed protection loans in the Appalachian region in 1965, and \$230,000 proposed in the estimates for 1967.

(Dollars in thousands)

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	Number	Amount	Number	Amount	Number	Amount
1. Applications on hand at beginning of year	132	\$26,175	180	\$35,245	241	\$47,480
2. Applications received during year	75	15,000	100	20,000	150	30,000
3. Total applications for consideration during year	207	41,175	280	55,245	391	77,480
4. Loans obligated during year	23	5,130	34	6,765	23	4,600
5. Loans closed during year (disbursements)	(20)	(4,154)	(40)	(8,100)	(23)	(4,600)
6. Applications withdrawn or disapproved	4	800	5	1,000	5	1,000
7. Applications pending at end of year	180	35,245	241	47,480	363	71,880
8. Loans obligated end of year (cumulative)	92	16,936	126	23,701	149	28,301

Characteristics of Loan Requests

Applications for loans received by the Farmers Home Administration have varied greatly in amount. The applications now pending average \$200,000 each. Most applications have included requests for funds to purchase land easements or rights-of-way and pay legal fees and organization costs. The larger loan requests have also included funds to pay the local organization's share of the installation costs of drainage channels, municipal water storage, irrigation works, recreational facilities and other multi-purpose improvements. The following are two examples of these approved loans.

1. Michigan - South Branch Cass River Watershed: A watershed loan of \$340,000 was made to the South Branch of the Cass River Drainage District in Sanilac and Lapier counties, Michigan, to finance the local share of the costs of this project. The works of improvement installed include 27 miles of multi-purpose channels and related structures to relieve local flooding and provide an adequate major drainage outlet. About 700 farms, covering 93,600 acres, and the town of Marlette, Wisconsin, are receiving protection from the annual damaging floods that have been experienced in the past. The loan was made for a 10-year period and evidenced by bonds secured by pledges of assessments on the benefitted lands.

2. Arkansas - Muddy Fork of Illinois River Watershed: A watershed loan of \$231,500 was made to the city of Lincoln, Arkansas, to pay the local costs of a multi-purpose dam and reservoir with 1,500 acre feet of water for municipal use and a 4-mile pipeline to carry water to a filtration plant. The new facilities serve 407 individual water customers and 27 business establishments at reasonable rates. Dairying and broiler production are important industries in this area and a good supply of pure water is essential to the community. Term of the loan is 35 years. Part of the bonds are general obligation and improvement district bonds but \$141,500 of the loan is evidenced by revenue bonds secured by a pledge of water system revenues. Adequate reserves for repairs and other emergencies will be maintained and water rates will compare favorably with other water systems in nearby communities.

RIVER BASIN PROGRAM DEVELOPMENT AND COORDINATION

Agency Participation

Section 6 of P.L. 566, 83rd Congress, as amended, authorizes the Secretary of Agriculture to cooperate with other Federal, State, and local agencies in making surveys and investigations of the watersheds of rivers and other waterways as a basis for the development of coordinated water and related land resources programs. Funds provided under this appropriation item for these surveys and investigations are allocated to participating agencies in the Department as follows:

Agency	: 1965 : Obligations	: 1966 : Estimated	: 1967 : Estimated
Soil Conservation Service	: \$2,976,469	: \$4,639,641	: \$5,631,400
Forest Service	: 366,324	: 640,000	: 933,000
Economic Research Service	: 495,156	: 942,100	: 1,349,600
Office of Management Services	: -122	: - -	: - -
Total	: 3,837,827	: 6,221,741	: 7,914,000

Coordinated Survey Program

The Secretary of Agriculture is a member of the Water Resources Council established by Public Law 89-80. The Department is represented on the Inter-departmental Staff Committee of the Council. The Staff Committee has given consideration to river basin surveys and investigations needed to attain the goal which was proposed by the Senate Select Committee on National Water Resources and adopted by the Administration of surveying the river basins of the country. Out of this joint consideration has developed the need for this Department to participate in five framework and fifteen detailed type inter-departmentally coordinated surveys that are now in progress and in three additional framework surveys to be started in fiscal year 1967. In addition the Department is currently cooperating with State water resource agencies and concerned Federal agencies in making sixteen other surveys, two of which are scheduled for completion in the current year. It proposes to initiate four additional surveys of this type in fiscal year 1967. The Department started cooperation in the Water Resource Survey in the Appalachian region in fiscal year 1966. It proposes to participate fully in this survey in fiscal year 1967 so as to complete its part within the time specified by the authorizing legislation

The Department is represented on the Interagency Committee on Water Resources which has been established to facilitate the coordination of water and related land resource activities by the various member Federal departments and agencies. The Department also maintains representation on various River Basin Interagency Committees, which serve as points of contact and coordination between representatives of this Department and of other Federal departments and agencies and the States in these basin areas, to keep all concerned mutually informed of the activities of the member agencies and to facilitate matters of interagency coordination. The Department, in 1965, maintains such representation on Committees in the Arkansas-White-Red, Columbia, Missouri, Northeast, Pacific Southwest, and Southeast areas. The river basins, states involved, cooperating agencies, and actual or estimated obligations are as follows:

(Dollars in thousands)

River Basin or Region	States Involved	Cooperating Agencies	Obligations		
			1965	1966	1967
			Actual	Estimate	Estimate
<u>Framework Type Surveys</u>					
(Type I)					
Ohio River Region	Pa., N.Y., W.Va., Tenn., Ohio, Ind., Ill., Md., N.C. & Ky.	Other Federal	\$197	\$182	\$72
Upper Mississippi River Region	Minn., Wisc., Iowa, Mo., Ill., & Mich.	Other Federal	141	269	240
Missouri River Region ..	Colo., Iowa, Kan., Minn., Mo., Mont., Nebr., N.D., S.D., & Wyo.		211	409	420
Columbia-North Pacific Region	Wash., Ore., Idaho, Mont., Utah, Nev., & Wyo.	Other Federal	- -	66	330
North Atlantic Region ..	Conn., Del., Me., Md., Mass., N.H., N.J., N.Y., Pa., R.I., Vt., Va., & W.Va.	Other Federal	- -	143	288
California Region	Calif., Oreg.	Other Federal	- -	- -	176
Upper Colorado Region ..	Ariz., Colo., N.M., Utah, & Wyo.	Other Federal	- -	- -	138
Lower Colorado Region ..	Ariz., Nev., N.M., & Utah	Other Federal	- -	- -	133
Total, Type I Surveys			(549)	(1,069)	(1,797)
<u>Detailed Type Surveys</u>					
(Type II)					
Kanawha River	W.Va., Va., & N.C.	Other Federal	120	163	185
Wabash River	Ill., Ind., & Ohio	Other Federal	197	272	264
Susquehanna River	N.Y., Pa., & Md.	Other Federal	144	200	208
Willamette River	Oregon	State and Other Federal	165	187	201
Pearl River	Miss., & La.	State and Other Federal	71	106	89
Pascagoula River	Miss.	State and Other Federal	117	138	146
Big Black River	Miss.	State and Other Federal	44	69	89
Red River below Denison Dam	La., Ark., Okla., Texas	Other Federal	162	188	181

River Basin or Region	States Involved	Cooperating Agencies	Obligations		
			1965	1966	1967
			Actual	Estimate	Estimate
<u>(Type II) - continued</u>					
Genesee River	N. Y. & Pa.,	State and			
		Other Federal:	103	125	51
Sabine River	Texas & La.	Other Federal:	112	148	78
White River	Mo., & Ark.	Other Federal:	153	204	203
Connecticut River	Conn., Vt., N.H.,	Other Federal:	134	201	218
	& Mass.				
Puget Sound Basin	Washington	Other Federal:	131	170	183
Big Muddy River	Illinois	Other Federal:	58	117	83
Grand River	Michigan	Other Federal:	108	128	121
Total, Type II Surveys			(1,819)	(2,416)	(2,300)
<u>Surveys in cooperation</u>					
<u>with State Water Resource</u>					
<u>Agencies and Concerned</u>					
<u>Federal Agencies (Type IV)</u>					
Arkansas Multiple-Purpose:					
Project	Ark., & Okla.	Corps of			
		Engineers	59	86	92
Humboldt-Central Lahontan:					
(Carson, Truckee &					
Walker Rivers)	Nevada & Calif.	State	85	121	129
Sevier Lake Drainage ...	Utah	State	131	148	154
Colorado Rivers	Colorado	State	109	149	165
Oregon Rivers	Oregon	State	88	120	123
Elkhorn, Big Blue and					
Niobrara Rivers	Nebraska	State	92	128	129
Florida Rivers	Florida	State	121	154	154
James and Big Sioux					
Rivers	S. D.	State	98	127	129
Meramec River	Missouri	Corps of			
		Engineers	106	132	- -
Poteau River	Okla. & Ark.	Corps of			
		Engineers	60	21	- -
Tombigbee River	Miss., & Ala.	State	1	- -	- -
Mississippi Independent					
Streams	Miss., & La.	State	1	16	154
North Coastal River					
Basin	Calif.	State	94	173	159
Upper Rio Grande	New Mexico	State	2	128	129
Arkansas River in Kansas	Kansas	State	- -	112	129
Lower Rio Grande	Texas	State	- -	112	129
South Grand and Osage					
Rivers	Missouri	State	- -	94	129

River Basin or Region	:	:	Obligations			
			Cooperating	1965	1966	1967
	States Involved	Agencies	Actual	Estimate	Estimate	
(Type IV) - continued	:	:	:	:	:	:
James River	Virginia	Corps of	:	:	:	144
	:	Engineers	- -	- -	- -	111
Santee River	South Carolina	State	- -	- -	- -	103
Western New York Basins	N. Y.	State	- -	- -	- -	77
Chickasaw Metropolitan	:	:	:	:	:	:
Water Management	:	:	:	:	:	:
Project	Tenn.	State	- -	- -	- -	:
	:	:	:	:	:	:
Total, Type IV Surveys	:	:	(1,047)	(1,821)	(2,339)	:
	:	:	:	:	:	:
Water Rsource Survey	:	:	:	:	:	:
Appalachian Region ...	:	:	- -	- -	- -	453
	:	:	:	:	:	:
Total Surveys	:	:	(3,415)	(5,306)	(6,889)	:
	:	:	:	:	:	:
Interregional Economic	:	:	:	:	:	:
Analysis	:	:	80	170	184	:
	:	:	:	:	:	:
Interagency Coordination	:	:	:	:	:	:
and Program Formulation:	:	:	:	:	:	:
Coordination	:	:	343	746	841	:
	:	:	:	:	:	:
TOTAL	:	:	3,838	6,222	7,914	:

Progress on Representative Surveys

The following examples are representative of the surveys and investigations being carried out by the Department in river basin areas.

Columbia-North Pacific Region (Type I) - Oregon, Washington, Idaho, Wyoming, Montana, Utah, and Nevada: In cooperation with the Departments of the Army, Health, Education and Welfare and of the Interior and with the concerned States, the Department is participating in a comprehensive framework survey of the drainage area of the Columbia River and of the rivers and streams tributary to the Pacific Ocean north of the Kalawath River. The survey will lead to the preparation of a general comprehensive plan of development and will include broad scaled analyses of water and related land resource problems of the region and general appraisals of the probable nature, extent and timing of measures for their solution. The Soil Conservation Service, Forest Service, and the Economic Research Service are participating in the study for the Department. Present schedules contemplate the completion of the survey in fiscal year 1970.

Big Black River Basin (Type II) - Mississippi: In cooperation with the Department of the Army, Health, Education, and Welfare, and of the Interior and the Board of Water Commissioners of the State of Mississippi, the Department is participating in a comprehensive detailed survey of the Big Black River Basin. The studies and investigations will consider the problems and needs for development of the water and related land resources and opportunities to meet such needs over the next fifty year period. The survey will lead to the preparation of a coordinated comprehensive plan of development for the upstream and downstream areas and will identify in detail those projects which should be installed within the next 10-15 year period. The Soil Conservation Service, Forest Service, and Economic Research Service are participating in the study for the Department. Present schedules contemplate the completion of this survey in fiscal year 1967.

Lower Rio Grande (Type IV) - Texas: In cooperation with the Texas Water Commission and the Texas State Soil Conservation Board, this Department is undertaking a survey and investigation of the water and related land resources of the lower Rio Grande. This area is utilized intensively for the production of high valued crops. There are severe flood problems and need for adequate drainage systems to remove ground water with high salt content. This survey will provide information to permit conservation and irrigation districts to develop watershed plans and other types of projects to maintain and improve the economy of this area. The Soil Conservation Service, Forest Service, and Economic Research Service are participating in the study for the Department. Present schedules contemplate the completion of the survey in fiscal year 1969.

Appalachian Water Resource Survey - Appalachian Region: At the request of the Corps of Engineers and under authority of Section 206 of Public Law 89-4 this Department is cooperating in a survey and investigation of the water resources of the Appalachian region. The information obtained will be used to incorporate water needs and developments for agriculture and upstream watershed area into the overall water resource needs of the region. Feasible upstream watershed projects in areas which have the greatest potential for economic development will be identified. The Soil Conservation Service, Forest Service, and Economic Research Service are participating in the study for the Department. The survey started in 1966 and is for completion in 1968.

(d) Flood Prevention

Appropriation Act, 1966	\$25,417,000
Transferred to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental	-6,000
Proposed supplemental, 1966, for increased pay costs	<u>160,000</u>
Base for 1967	25,571,000
Budget Estimate, 1967	<u>25,654,000</u>
Increase (to provide for full-year costs of pay increases pursuant to P.L. 89-301)	<u><u>783,000</u></u>

PROJECT STATEMENT

Project	:	:	: <u>Increases and Decreases:</u>			:	:
			1966	Increased	Other		
	:	:	(estimated):	Pay Costs		:	1967
	:	:	:	(P.L. 89-301):	:	:	(estimated)
1. Works of improve-	:	:	:	:	:	:	:
ment	:	:	:	:	:	:	:
\$26,117,103:	:	:	\$25,371,000:	783,000	- -	:	\$25,454,000
2. Loans and related:	:	:	:	:	:	:	:
expense	:	:	:	:	:	:	:
200,000:	:	:	200,000:	- -	- -	:	200,000
Total increased pay :	:	:	:	:	:	:	:
costs (P.L. 89-	:	:	:	:	:	:	:
301)	:	:	:	:	:	:	:
(- -) :	:	:	(216,000):	(785,000)	- -	:	(301,000)
Total available or :	:	:	:	:	:	:	:
estimate	:	:	:	:	:	:	:
26,317,103:	:	:	25,571,000:	783,000(1)	- -	:	25,654,000

(1) An increase of \$83,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

The project statement on the preceding page reflects increases and decreases on the basis of appropriations. The following tabulation reflects carryover into succeeding years of actual or estimated prior-year unobligated balances and shows actual and estimated obligations.

PROJECT STATEMENT
(On the basis of available funds)

Project	1965	1966	Increase or Decrease	1967
		(estimate)		(estimate)
1. Works of improvement	\$28,494,059	\$26,536,000	-\$1,082,000	\$25,454,000
2. Loans and related expense ...	368,222	1,000,000	- -	1,000,000
Total increased pay costs				
(P.L. 89-301)	- -	(216,000)	(185,000)	(301,000)
Total obligations	28,862,281	27,536,000	-1,082,000	26,454,000
Unobligated balance start of year:	-8,175,661	-5,630,483	1,965,000	-3,665,483
Unobligated balance end of year :	5,630,483	3,665,483	-800,000	2,865,483
Total available or estimate	26,317,103	25,571,000	83,000	25,654,000

Actual and projected unobligated balances as of the close of each fiscal year and available in the succeeding year as reflected in the above tabulations are distributed by activity, as follows:

	<u>Works of Improvement</u>	<u>Loans</u>	<u>Total</u>
1965 to 1966	\$3,399,657	\$2,230,826	\$5,630,483
1966 to 1967	2,234,657	1,430,826	3,665,483
1967 to 1968	2,234,657	630,826	2,865,483

The decrease of \$1,082,000 in estimated obligations for works of improvement in 1967 is due to a decrease in program needs. The same carryover of \$2,234,657 is projected from 1966 to 1967 and 1967 to 1968. This is a reasonable expectation for a construction program of this type and size. Generally there is a substantial backlog of work nearly ready for contracting at the end of each year. The carryover funds are then obligated early in the next fiscal year.

Estimated obligations for loans and related expense are \$1,000,000 for each of the fiscal years 1966 and 1967. The \$800,000 above the appropriation request for each year is available from prior-year unobligated balances of loan funds, which amounted to \$2,230,826 at the start of the 1966 fiscal year. It is estimated that unobligated available loan funds will amount to only \$630,826 by the close of the 1967 fiscal year.

The following table shows by watershed the distribution of funds appropriated in fiscal years 1965 and 1966; funds requested in 1967; actual obligations in fiscal year 1965; and estimated obligations in fiscal years 1966 and 1967:

Flood Prevention Watershed	1965 Actual		1966 Estimate		1967 Estimate	
	Appropriation: (adjusted)	Obligations	Appropriation: (adjusted) 1/	Obligations	Appropriation	Obligations
Buffalo Creek, New York		-\$141	(Project Completed)			
Colorado (Middle), Texas	\$1,949,491	1,845,643	\$1,709,300	\$1,809,300	\$2,016,900	\$2,016,900
Coosa, Georgia	1,509,614	1,437,912	854,800	1,058,800	1,204,400	1,204,400
Little Sioux, Iowa, Minnesota ..	1,329,656	1,039,971	1,591,200	1,591,200	1,210,300	1,210,300
Little Tallahatchie, Miss. ..	1,699,643	2,376,706	1,540,800	1,640,800	1,919,100	1,919,100
Los Angeles, California	2,099,696	2,169,046	2,145,600	2,450,600	2,080,600	2,080,600
Potomac, Md., Pa., Va., and W. Va.	1,832,543	2,294,253	2,605,700	2,688,700	2,905,700	2,905,700
Santa Ynez, California	81,000	466,302	455,800	531,800	472,600	472,600
Trinity, Texas	4,298,879	4,739,962	4,167,900	4,242,900	4,336,400	4,336,400
Washita, Oklahoma, Texas	5,217,754	5,872,513	5,270,600	5,274,465	4,131,800	4,131,800
Yazoo, Mississippi	4,898,827	5,397,429	4,729,300	4,729,300	4,876,200	4,876,200
Emergency Measures	1,200,000	854,463	300,000	518,135	300,000	300,000
Subtotal	26,117,103	28,494,059	25,371,000	26,536,000	25,454,000	25,454,000
Loans and related expense ...	200,000	368,222	200,000	1,000,000	200,000	1,000,000
Amount available or estimate:						
Unobligated balance brought forward	- -	-8,175,661	- -	-5,630,483	- -	-3,665,483
Unobligated balance carried forward	- -	5,630,483	- -	3,665,483	- -	2,865,483
Appropriation or estimate ...	26,317,103	26,317,103	25,571,000	25,571,000	25,654,000	25,654,000

1/ Includes \$160,000 to be requested in a supplemental estimate for increased pay costs.

STATUS OF PROGRAM

Current Activities: The Flood Control Acts, as amended and supplemented (33 U.S.C. 701-709, 16 U.S.C. 1006a, 76 Stat. 610), provide for installation of (1) mainstream works of improvement for the control of floods, for which the Department of the Army is responsible, and (2) watershed improvement measures to prevent floods; reduce floodwater, sedimentation, and erosion damages; and further the conservation, development, utilization, and disposal of water, for which the Department of Agriculture is responsible. The work of this Department under this item is carried on in the 11 watersheds authorized by the Flood Control Act of December 22, 1944, as amended and supplemented.

To provide consistency between the Flood Prevention and the Watershed Protection programs of the Department, which have similar objectives, the planning criteria, economic justifications, local sponsorship requirements, cost-sharing criteria, structural limitations and other policies and procedures used in the Flood Prevention program have been adjusted to generally parallel those of the Watershed Protection program.

Types of Assistance Furnished by the Department

The assistance furnished under this appropriation item consists of the following:

1. Preparation of detailed subwatershed work plans in collaboration with soil conservation districts and other local sponsoring organizations. These plans outline soil and water management problems in subwatersheds, what has been or is planned to be done to alleviate these problems, the proposed works of improvement to be installed, the estimated benefits and costs, cost-sharing and operation and maintenance arrangements, and other facts necessary to justify Federal participation in project development.
2. Technical and financial assistance to local project sponsors and individual farmers and ranchers with the installation of works of improvement specified in approved subwatershed work plans:
 - a. On structural measures: This work includes the installation of structural measures for flood prevention and water management such as floodwater retarding structures, stream channel improvements, stabilizing and sediment control structures, irrigation reservoirs and canals, and the storage of water in structures for various purposes. Detailed construction plans, designs, and specifications are prepared for these measures by the Department. The Department usually does the contracting and bears all of the construction cost of structural measures for flood prevention. It finances up to 50 percent of the cost of works of improvement for agricultural water management and for public fish and wildlife or recreational development (including the cost of minimum basic facilities for public

health and safety and access to the area). Local organizations must pay all costs of works of improvement for other purposes. In addition local organizations must acquire water rights and furnish land, easements, and rights-of-way for all structural measures except that the Federal government may pay up to one-half the cost of land, easements, and rights-of-way allocated to public fish and wildlife and recreational developments. Local organizations must operate and maintain the completed works of improvement on private lands.

In addition to loans and advancements made under Section 8 of Public Law 566, 83d Congress (as amended), advances may be made to local organizations from construction funds under Section 4 of the Act to provide for immediate acquisition of land, easements, and rights-of-way to prevent encroachment by other developments, and to provide for storage for future municipal and industrial uses. In each case, advances must be repaid with interest. Advances for preservation of structure sites must be repaid prior to the start of construction.

Engineering assistance is provided by the Department for flood prevention, agricultural water management, and for water resources improvements for public fish and wildlife and recreational purposes. The Department may also supply up to one-half the cost of engineering assistance required in connection with installation of minimum basic facilities for public fish and wildlife and recreational development.

- b. On land treatment measures: The Department furnishes farmers and ranchers the technical assistance needed to speed up the installation of land treatment measures to achieve required protection of structural measures constructed in subwatersheds. This supplements technical assistance available under other conservation programs.

Certain types of land treatment measures are required to be installed under this program to achieve justified off-site flood prevention benefits. Such measures provide little or no benefits, or such long-deferred benefits to the landowner that he cannot be expected to pay a substantial part of the cost of their installation on his farm. The Federal government may pay part or all of the cost of installing these special measures. Measures eligible for this assistance are intensified fire prevention; stabilization of critical areas; minor gully, streambank, and grade stabilization structures; and other on-farm measures which may be used in lieu of installing downstream flood prevention structures. The Department may furnish vegetative planting and other materials to landowners for establishment of these essential measures or it may contract the required work or do it by force account.

3. Making loans to local organizations to finance the local share of the costs of installing planned works of improvement for flood prevention and for the conservation, development, utilization, and disposal of water, including development of public fish and wildlife and recreational facilities, and municipal and industrial water supplies. Repayment with interest is required within fifty years after the principal benefits of improvements first become available.

Proposed improvements by the Department are correlated with mainstream work installed by the Corps of Engineers, the Bureau of Reclamation, and others, in addition to providing protection to the watershed lands and property above the mainstream works. Maintenance of installed measures is the key to the long-term effectiveness of the watershed improvement programs. Landowners and operators generally maintain those land treatment measures which benefit primarily the lands upon which they are installed. Local units of government have the responsibility to maintain structural measures for flood prevention and water management which provide primarily off-site benefits.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department of Agriculture authorized under the Flood Control Acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of land treatment measures and structural works of improvement in the authorized watersheds. The Forest Service is concerned with (a) national forests and other lands in the authorized watersheds which they administer, (b) all range land in or adjacent to national forests which is used in conjunction with such forests under formal agreement with the landowner, and (c) certain specialized technical assistance on other forest lands within the watersheds. The Soil Conservation Service is concerned with all other private and public lands in the watersheds.

The Farmers Home Administration is responsible for carrying out the authority to make loans or advancements under Section 4 and 8 of Public Law 566, 83d Congress (as amended). No loans or advancements may be made under these provisions until the Soil Conservation Service and the local organization have agreed on a plan for works of improvement.

The Economic Research Service is making an appraisal of the economic impact of the flood prevention program in the Washita River Basin.

Selected Examples of Recent Progress:

WORKS OF IMPROVEMENT

Allocation of Funds by Agency

Funds appropriated for planning and installing works of improvement and for loans are allocated as follows:

Agency	: 1965 : (adjusted)	: 1966 : (adjusted)	: 1967 : Estimate
Soil Conservation Service	: \$21,166,103	: \$21,164,800	: \$21,144,400
Economic Research Service	: 43,000	: 45,200	: 45,600
Farmers Home Administration	: 200,000	: 200,000	: 200,000
Forest Service	: 3,108,000	: 3,861,000	: 3,964,000
Emergency Measures <u>a/</u>	: 1,200,000	: 300,000	: 300,000
Total	: 26,317,103	: 25,571,000	: 25,654,000

a/ Under authority of Section 216 of the Flood Control Act of 1950, not to exceed \$300,000 of the amount appropriated for Flood Prevention may be expended each fiscal year for emergency measures when a fire, flood or any other natural element or force has caused a sudden impairment of a watershed. Any balances not needed for these purposes are distributed late in the fiscal year to the watershed(s) where the greatest need exists and where the local sponsoring organizations have provided lands, easements, and rights-of-way required for installation of additional works of improvement. The Supplemental Appropriation Act, 1965 provided an additional \$900,000 for emergency measures needed as a result of the Coyote and other fires in the fall of 1964 in the Santa Barbara, California area, and in other areas.

Actual and projected obligations of funds for planning and installing works of improvement, and for loans are distributed by agency as follows:

Agency	: 1965 : Actual	: 1966 : Estimate	: 1967 : Estimate
Soil Conservation Service	: \$23,732,338	: \$21,937,226 <u>a/</u>	: \$21,144,400
Economic Research Service	: 38,857	: 45,200	: 45,600
Farmers Home Administration	: 368,222	: 1,000,000 <u>b/</u>	: 1,000,000 <u>b/</u>
Forest Service	: 3,868,401	: 4,035,439 <u>c/</u>	: 3,964,000
Emergency Measures	: 851,463	: 518,135 <u>d/</u>	: 300,000
Total	: 28,862,281	: 27,536,000 <u>e/</u>	: 26,454,000 <u>b/</u>

a/ Includes \$772,426 of prior year unobligated balances; b/ Includes \$800,000 of prior year unobligated balances; c/ Includes \$174,439 of prior year unobligated balances; d/ Includes \$218,135 unobligated balances of prior year \$900,000 supplemental appropriation; e/ Includes \$1,965,000 of prior year unobligated balances.

The following table provides a breakdown by watershed of the allocation of available funds for works of improvement for the fiscal years 1966 and 1967:

Watershed	1966 Available Funds			1967 Available Funds (Estimate)		
	SCS a/	FS	Total	SCS a/	FS	Total
1. Buffalo Cr., N. Y...	- -	- -	- -	- -	- -	- -
2. Colorado (Middle), Texas	\$2,036,091	- -	\$2,036,091	\$2,243,691	- -	\$2,243,691
3. Coosa, Georgia	1,247,984	\$101,201	1,349,185	1,464,285	\$30,500	1,494,785
4. Little Sioux, Iowa, Minnesota	2,386,792	15,409	2,402,201	2,006,001	15,300	2,021,301
5. Little Tallahatchie, Mississippi	1,275,652	392,178	1,667,830	1,559,930	386,200	1,946,130
6. Los Angeles, Calif..	552,031	2,076,934	2,628,965	178,365	2,080,600	2,258,965
7. Potomac, Md., Pa., Va., W. Va.	2,783,551	137,248	2,920,799	2,975,199	162,600	3,137,799
8. Santa Ynez, Calif. .	41,544	493,464	535,008	- -	472,600	472,600
9. Trinity, Texas	4,558,297	- -	4,558,297	4,651,797	- -	4,651,797
10. Washita, Okla., Texas	5,359,396	3,026	5,362,422	4,219,865	3,100	4,222,965
11. Yazoo, Miss.	3,975,715	815,979	4,791,724	4,125,524	813,100	4,938,624
Subtotal	24,217,083	4,035,439	28,252,522	23,424,657	3,964,000	27,388,657
	b/:		b/:			
Emergency Measures	518,135	- -	518,135	300,000	- -	300,000
Subtotal	24,735,218	4,035,439	28,770,657	23,724,657	3,964,000	27,688,657
Unobligated balance carried forward	-2,234,657	- -	-2,234,657	-2,234,657	- -	-2,234,657
Total Obligations, Estimates	22,500,561	4,035,439	26,536,000	21,490,000	3,964,000	25,454,000

a/ Amounts shown as available to the Soil Conservation Service include allotments of \$45,200 in 1966 and \$45,600 in 1967 to the Economic Research Service for evaluation studies in the Washita River Flood Prevention Project.

b/ Includes \$218,135 unobligated balances of the \$900,000 for emergency measures provided by the Supplemental Appropriation Act, 1965.

Subwatershed Work Plans

Because of the size of the 11 authorized flood prevention projects, work plans are developed on a subwatershed basis. As of June 30, 1965, the total planning job was about 2/3 completed, with 244 work plans completed that include 19,454,196 acres. The following table summarizes the status of subwatershed planning by authorized project:

Flood Prevention Watersheds	Total		Subwatersheds and		Subwatershed and other	
	Authorized		other Areas with a/		Work Plans Prepared to	
	Area	Planning Potential	Area	Planning Potential	Area	6/30/65
	Acres	No.	Acres	No.	Acres	
Buffalo Creek	279,680	3	279,680	3	279,680	
Colorado (Middle) ...	4,613,120	18	4,613,120	13	3,584,700	
Coosa	1,339,400	17	1,339,400	17	1,339,400	
Little Sioux	1,740,800	210	660,000	65	158,420	
Little Tallahatchie .	963,977	23	867,476 b/	15	535,756	
Los Angeles	536,960	12	301,731 c/	12	301,731 c/	
Potomac	4,205,400	32	3,488,000	11	919,750	
Santa Ynez	576,000	7	366,950 c/	6	364,600 c/	
Trinity	8,424,260	33	7,085,320	25	5,829,274	
Washita	5,095,040	62	5,095,040	48	4,034,624	
Yazoo	3,222,400	50	3,026,582 d/	29	2,106,261	
Total	30,997,037	467	27,123,299	244	19,454,196	

- a/ Excludes subwatersheds and other areas where the physical and economic conditions do not meet the program criteria for the use of Federal funds for the installation of structural works of improvement. Other excluded areas are identified by additional footnotes.
- b/ Excludes 96,501 acres of Sardis Reservoir area.
- c/ Includes National Forest and other lands, for which the Forest Service has been assigned program responsibility. Comprehensive plans for works of improvement have been prepared for these areas.
- d/ Excludes 195,818 acres of Reservoir area.

Soil Surveys and Conservation Plans in Flood Prevention Projects

The following table shows the acres surveyed and conservation plans prepared in the 1965 fiscal year with Flood Prevention funds and estimates for 1966 and 1967:

Item	: 1965 : Actual	: 1966 : Estimate	: 1967 : Estimate
Soil surveys (acres)	: 853,305	: 800,000	: 800,000
Total number cooperators	: 2,380	: 2,300	: 2,250
Basic conservation plans:	:	:	:
Number	: 2,743	: 2,660	: 2,553
Acres	: 517,707	: 500,000	: 480,000

The following table shows the acres surveyed and conservation plans prepared cumulative through June 30, 1965, with both Flood Prevention and Conservation Operations funds:

Item	: Flood : Prevention : Funds	: Conservation: : Operations : Funds	: Grand : Total
Soil survey (acres)	: 8,672,887	: 14,750,838	: 23,423,725
Total number cooperators	: 41,750	: 41,590	: 83,340
Basic conservation plans:	:	:	:
Number	: 37,531	: 35,776	: 73,307
Acres	: 7,641,842	: 8,966,799	: 16,608,641

Works of Improvement Installed in Flood Prevention Projects

The following table shows the works of improvement installed in the 11 authorized flood prevention watersheds in the fiscal year 1965 with Flood Prevention funds and with other funds, and the amounts on the land, all programs, through June 30, 1965:

Works of Improvement	Unit:	Installed in 1965		Total Practices
		Flood Preven-	Other	
		tion Program	Programs	"On the Land"
<u>Structural Measures:</u>				
Floodwater retarding structures	No. :	170	- -	1,877
Grade stabilization structures	No. :	505	171	5,538
Channel stabilization	Miles:	1.4	- -	11
Channel improvement	Miles:	29	5	461
Levees and dikes	Miles:	2	- -	24
<u>Land Treatment Measures:</u>				
Conservation cropping system	Acres:	514,456	411,391	2,708,191
Contour farming	Acres:	258,797	191,159	1,923,061
Cover and green manure crops	Acres:	137,472	102,879	827,413
Critical area planting 1/	Acres:	15,979	19,361	531,677
Crop residue use	Acres:	518,815	388,263	3,102,592
Debris basins 1/	No. :	547	100	10,999
Diversions 1/	Miles:	56	140	7,605
Farm Ponds	No. :	125	2,383	86,188
Grassed waterways or outlets 1/ .	Acres:	1,528	1,466	64,301
Pasture and hayland planting	Acres:	80,216	60,951	1,728,836
Pasture proper use	Acres:	326,468	219,258	1,340,678
Range deferred grazing	Acres:	224,308	292,691	1,240,329
Range proper use	Acres:	667,881	682,709	4,056,992
Range seeding	Acres:	8,757	21,516	565,791
Stripcropping	Acres:	709	1,955	134,392
Structure for water control	No. :	426	298	1,132
Stubble mulching	Acres:	7,694	14,264	150,208
Terracing 1/	Miles:	78	942	67,137
Tree planting	Acres:	95,515	12,335	320,289
Wildlife development	Acres:	4,276	1,079	55,571
Woodland planting	Acres:	2,931	3,852	73,391
Intermediate cutting	Acres:	2,647	3,454	88,613
<u>Forest Fire Control:</u>				
Fire control roads, trails, and				
fire breaks	Miles:	46	2/	858
Structures (Fire towers, bldgs.,				
etc.)	No. :	3	2/	192
Heliports and Helispots	No. :	7	2/	408
Mobile equipment	No. :	3	2/	64
Permanent radio installations ...	No. :	3	2/	301

1/ Includes some measures installed as structural measures.

2/ Not available.

Progress in Individual Projects

A description of the flood prevention and conservation work being accomplished in each of the 11 authorized flood prevention watersheds follows. The estimated Federal cost for each watershed reflects 1960 prices, as adjusted to reflect installation of fish and wildlife and recreational developments and future water supplies under provisions of recent amendments to the Watershed Protection and Flood Prevention Act (76 Stat. 608-610) 7:

Buffalo Creek Watershed, New York

Total Federal cost (Project completed in 1964) \$4,615,254

The Buffalo Creek project was authorized for operations December 22, 1944, and was completed during the fiscal year 1964. It is the first of the 11 authorized Flood Prevention projects to be completed. The Erie-Wyoming Soil Conservation District Joint Board sponsored the project which covers 279,680 acres in Erie and Wyoming Counties, including 13,440 acres within the city of Buffalo. The completed project is reducing siltation in the Buffalo River portion of Buffalo Harbor by controlling streambank and farmland erosion.

The completed structural works of improvement include the stabilization of about 59 miles of the channels of Buffalo Creek and Cazenovia Creek by 690,000 cubic yards of earth excavation, 290,000 cubic yards of fill in embankments and training dikes, and 330,000 square yards of riprap. One rock-filled concrete crib dam was constructed as a stream gradient control measure.

Middle Colorado River Watershed, Texas

Estimated total Federal cost \$34,956,957
Total obligations through June 30, 1965 18,446,275

The Colorado River Project includes approximately 4,613,000 acres of the middle section of the Colorado River Watershed in Texas. The principal problems in the watershed are floodwater and sediment damages to agricultural lands and non-agricultural properties. Practically all of the agricultural land in the watershed is privately owned. The sponsors of the project are the local soil conservation districts and some county governments. To date, work plans have been developed for 13 subwatersheds totaling 3,584,700 acres.

More than 68 percent of the planned land treatment has been applied in the 9 subwatersheds where construction is under way. Of the 3,835 operating units in these projects, 2,754 are district cooperators and 2,459 have basic conservation plans. There are 7,002 operating farm and ranch units in the entire Middle Colorado watershed. Of this number, 5,006 are cooperating with local soil conservation districts and 4,606 have basic conservation plans. Good progress has been made in the application of land treatment in most

subwatersheds. In Turkey Creek more than 90 percent of the planned land treatment measures has been applied. More than 73 percent of the land treatment planned for Mustang Creek watershed has been applied. Application of planned practices in Jim Ned, Home, and Northwest Laterals watersheds is 71, 64, and 60 percent completed, respectively.

Construction has been completed on 174 floodwater retarding structures and 6 miles of channel improvement. Twenty-nine floodwater retarding structures and 3.0 miles of channel improvement are scheduled for construction during the 1966 fiscal year.

Easements and rights-of-way valued at nearly \$2,500,000 have been secured by the sponsoring local organizations. An outstanding job of securing easements was done on the Brady Creek watershed. Easements valued at \$1,290,000 were secured by the sponsors for the installation of 41 floodwater retarding structures and Brady multi-purpose reservoir. In Jim Ned Creek watershed, the sponsors have secured easements from 105 landowners, valued at \$284,000. Six county commissioners courts are co-sponsoring projects to assist soil conservation districts and other local sponsors in obtaining easements and rights-of-way and/or in carrying out local responsibility for operation and maintenance.

During the 1965 fiscal year there were a number of storms of high intensity and heavy rainfall in various sections of the watershed. Floodwater retarding structures installed prevented extensive damage to crops, land, fences, roads, and bridges and gave ample evidence of program effectiveness.

Over 100 of the completed floodwater retarding structures in the watershed are providing recreational opportunities for residents of the area. All of the sediment pools of these structures have been stocked with fish and one structure has been developed for duck hunting. Most of the structures are open to the public for recreation and fishing.

The multi-purpose Brady Lake has about 8,000 acre-feet of water impounded, and is open to the general public for boating, skiing, and fishing. Two housing developments have been started with several lake houses built or under construction. The City of Brady plans to install a deep well at the lake to provide a water supply for the lake developments.

Coosa River Watershed, Georgia and Tennessee

Estimated total Federal cost	\$12,692,749
Total obligations through June 30, 1965	9,802,981

The Coosa River Project includes approximately 1,339,400 acres. About 85% of the watershed is privately owned, and 130,350 acres are in national forestland. The project is sponsored by the four soil and water conservation districts in the watershed, and the State Highway Department of Georgia. The principal problems in the project area are erosion, floodwater, and sediment damage to agricultural lands, county roads, and other improvements.

More than 85% of the planned land treatment measures have been applied. Of the 7,100 landowners in the project, 5,017 are district cooperators, and 4,791 have basic conservation plans. Landowners in the project have planted 6,586 acres in pine trees and 50,278 acres to improved pastures; treated 10,581 acres of critical silt-producing areas by planting grasses and legumes or trees; and have constructed 432 farm ponds since the project was authorized.

Technical assistance by the Georgia Forestry Commission in cooperation with the U. S. Forest Service has been provided to 242 landowners involving 18,826 acres of forest land. Principal accomplishments to date on National Forest lands include 16 miles of streambank stabilization, 214 miles of roadside erosion control, 119 acres of critical area stabilization, 60 miles of skid trail and logging road erosion control, 1,028 acres of tree planting, and 2,681 acres of hydrologic stand improvement.

To date, 90 of the planned 142 floodwater retarding structures have been completed. Contracts have been let on 10 additional structures. These are about 30% complete. All structural measures are 70% completed.

Easements and rights-of-way have been obtained for approximately 75 percent of the structural measures in the project. Lack of adequate legal authority has hindered securing easements and rights-of-way in a timely manner. The four soil and water conservation districts' boards of supervisors could not exercise power of eminent domain until 90 percent of all easements and rights-of-way in the project had been acquired. New State legislation enacted in 1964 authorized the county governments to exercise power of eminent domain as needed, regardless of the percentage of easements and rights-of-way acquired. The county governments have already started exercising this authority, and it is anticipated that the acquisition of the remaining easements and rights-of-way will be greatly accelerated.

The effectiveness of the project measures installed have been tested numerous times in small creek drainage areas. The following example is typical:

Cartecay River Subwatershed - On October 3 and 4, 1964, 7.66 inches of rainfall was recorded in this watershed. Approximately 5 inches fell during an 8-hour period. Little or no damage occurred below the completed structures. The adjoining watershed, where no structures had been completed, received damages estimated at more than \$60,000 to buildings, bridges, roads, fences, etc. There were also extensive damages to pastures and croplands.

Little Sioux River Watershed, Iowa and Minnesota

Estimated total Federal cost	\$33,513,313
Total obligations through June 30, 1965	16,283,732

The Little Sioux Project covers an area 135 miles long and is 50 miles wide at its greatest width. It extends from southwest Minnesota to a point of confluence with the Missouri, midway between Sioux City and Omaha and

includes about 2,880,000 acres of which 1,740,800 are authorized for assistance under the flood prevention program. The soils of the area are of loessial origin. The wind-deposited materials are commonly found in depths of 25 to 50 feet, and frequently 100 feet or more. Although highly productive, these soils are very susceptible to sheet and gully erosion. Gullies 20 to 40 feet deep are common, and in some instances they have developed to depths of 50 feet and more. Damages resulting from gully erosion are greatly affecting the economy of many farm units in both the uplands and the bottom lands which lie in the Missouri River floodplain. The most productive areas of many of the upland farms are being destroyed by gully erosion. Crops in the 200,000 acre floodplain are frequently damaged by flooding, and channels of the complex drainage system are often choked by deposits of sediment.

Twelve soil conservation districts are represented on the Little Sioux Works Committee which provides overall guidance for execution of the program and establishes work priorities. Sixty-five subwatershed work plans covering 158,420 acres had been prepared and approved as of June 30, 1965. All planned work has been completed in 57 of these subwatersheds. Construction work is underway in seven subwatersheds, and work plans are being prepared for eight others.

Of the 8,400 operating units in the authorized part of the watershed, 4,673 were cooperating in their soil conservation district program as of June 30, 1965. These cooperators had developed 3,641 basic farm conservation plans, comprising 727,555 acres. The major land treatment measures applied include 273,080 acres of contour farming, 304 grade stabilization structures, 4,170 miles of terraces and diversions, and 4,872 acres of grassed waterways.

Structural measures installed as of June 30, 1965, include 303 floodwater retarding structures, 395 grade stabilization structures, 561 acres of grassed waterways, 69.5 miles of channel improvement, 20 miles of diversions, 17.5 miles of dike construction, 16.1 miles of floodways, and 992 miles of detention terraces.

The installation of forestry measures in cooperation with the Forest Service was initiated in FY 1965. Ninety-three acres of tree planting and 603 acres of woodland grazing control were accomplished. Timber management assistance was given to 197 owners involving 660 acres.

Little Tallahatchie River Watershed, Mississippi

Estimated total Federal cost	\$20,729,705
Total obligations through June 30, 1965	14,573,266

The Little Tallahatchie River Project includes 963,977 acres in north central Mississippi. About 80 percent of the land area is privately owned, 10 percent is in national forest, and 10 percent is devoted to Sardis Reservoir. Subwatershed work is sponsored by a water management district organized for each subwatershed and the Tallahatchie River Soil Conservation District. The principal problems in the watershed are floodwater and sediment damages to agricultural lands. Work plans have been developed for 15 subwatersheds totaling 535,756 acres.

Of the 6,555 farmers in the watershed, 5,168 are district cooperators, and 3,822 have basic farm conservation plans. More than 64% of planned treatment measures have been applied; and on the five watersheds where all structures have been installed or are under contract, 90% of the land treatment measures have been established. Major accomplishments include 38,023 acres of conservation cropping systems; 138,110 acres of critical area treatment; 3,136 debris basins; 3,703,379 feet of drainage ditches; 3,359 farm ponds; 1,785,842 feet of diversion ditches; 71,913 acres of pasture planting; 132,396 acres of tree planting; fire protection on 440,000 acres involving the installation of 12 fire towers, 17.5 miles of telephone lines, 70 mobile and stationary radios, 21 tractor-plow units, 6 tractor dozer blades and 4 slip-on pumper units; roadbank stabilization to minimize sediment movement from 175 miles of roads; and timber management assistance to 9,727 owners involving 284,651 acres of forest land.

Fifty-five of the 79 floodwater retarding structures included in work plans have been constructed, and 12 structures are under contract; 735,026 linear feet of stream channel improvement have been completed, and 73 miles are under contract.

Easements and rights-of-way valued at \$320,000 have been obtained from 370 landowners by the water management district commissioners. Most of the easements for Tippah River have now been secured.

Project benefits are illustrated by the 15,802 acre Greasy Creek subwatershed where project works of improvement have eliminated \$40,000 damages that occurred normally each year.

Over 3,000 acres of fertile flood plain land in Cane Creek, in Tippah County, have been protected by improvements on 12 miles of the main creek channel and the planting of over 2 million pine seedlings to stabilize gullied areas.

There has been no flooding on more than 1,000 acres of fertile flood plain land in Upper Tallahatchie River, Tippah County, since the five floodwater retarding structures and five miles of channel improvement were constructed in 1957. This stream was severely flooded before the protective measures were installed.

Los Angeles River Watershed, California

Estimated total Federal cost	\$48,435,349
Total obligations through June 30, 1965	21,218,447

The Los Angeles River Project covers 536,960 acres, of which 73 percent is privately owned and 27 percent is Federal land in the Angeles National Forest. The Department of Agriculture is cooperating with the Los Angeles County Flood Control District in the development of this project. Flood prevention works of improvement being installed supplement the improvements

being made by the Corps of Engineers on the principal river channels. This watershed is characterized by high intensity rainstorms of short duration. Erosion in the watershed is severe during peak runoff and the sediment is deposited on the relatively flat valley floor during flood flows. Channel capacity from the steep canyons to the Los Angeles River is inadequate for normal winter runoff in most instances.

Because of the rapid urban development in the San Fernando Valley, practically all of the land treatment work on private land today consists of street drainage and storm drains planned and constructed entirely by local agencies.

Work accomplished by the Forest Service during FY 1965 includes the completion of 13 channel stabilization structures including one-half mile of access road construction to the sites. One and one-third miles of channel were stabilized. Forest fire control was strengthened by the construction of 3.1 miles of access fire road, 11.3 miles of fire breaks, 11 sizable water tanks, and 174 acres of fire hazard reduction.

To June 30, 1965, Forest Service cumulative accomplishments on private lands include the completion of 98 channel stabilization structures, 16.2 miles of access road construction and 11.4 miles of channel stabilization. Principal accomplishments on National Forest lands include the installation of 177 channel stabilization structures, 18 miles of access road construction, 7.9 miles of channel clearing and alignment, 184 acres of critical area planting, 373 miles of access fire road and fire breaks, 67 miles of road bank stabilization and 450 acres of fire hazard reduction.

For that part of the watershed for which SCS has responsibility, structural measures have been completed on six subwatersheds and partially completed on four. No structural measures have been installed and none are contemplated in the two remaining subwatersheds. Work completed to date includes 32.7 miles of stream channel improvement, 26 miles of streambank protection, 9.4 miles of stream channel stabilization, 234 grade stabilization structures, and 2 debris basins. Structural measures as based on estimated costs are about 80 percent complete.

During the past year, plans and specifications for the improvement of Santa Susana Creek were completed, rights-of-way were acquired, and an invitation for bids was issued in May, 1965. Construction will require about 10 months. The work involves 1.68 miles of reinforced concrete open rectangular channel, bridge, and other appurtenant work.

Plans and designs for the improvement of a second and final unit of Aliso Creek involving 1.2 miles of reinforced concrete open rectangular channel, bridge and appurtenant work, are well advanced. Specifications are to be prepared and the construction contract is to be awarded and administered by the sponsor. The contract is scheduled for advertising in the spring of 1966.

Plans and designs for the improvement of a fifth and final unit of Bull Creek involving 1.0 mile of reinforced concrete open rectangular channel are also in preparation by Service personnel. Specifications are to be prepared and the construction contract, scheduled for advertising in the fall of 1966, is to be awarded and administered by the sponsors. In addition, plans, designs, and specifications for the improvement of a second and final unit of Calabasas Creek are being prepared by the sponsor. This project involves 1.1 miles of reinforced concrete open rectangular channel, four highway bridges, and appurtenant work. The construction contract, to be awarded and administered by the sponsors, is scheduled for advertising in the spring of 1966.

Although design storms have not occurred subsequent to completion of the various structures, there is much evidence which indicates the effectiveness of the measures installed. Runoff, which normally overtopped natural channels and resulted in considerable damage, is now being safely carried to the Los Angeles River and flood control basins installed. The channel improvement works constructed under this program have proven to be adequate and very helpful to the area served.

There were no flood or fire events of consequence in the critical mountain area of the watershed during the year. The fire starts that occurred in this area were quickly controlled with project facilities playing an important part. Sixty-nine acres were burned, which is well within project fire control objectives.

Potomac River Watershed, Md., Pa., Va., W.Va.

Estimated total Federal cost	\$31,550,308
Total obligations through June 30, 1965	12,573,869

The authorized area of the Potomac River watershed includes 4,205,400 acres in Maryland, Pennsylvania, Virginia and West Virginia. The principal problems are flooding and sedimentation of agricultural lands, and floodwater damage to towns, highways and bridges.

As of June 30, 1965, eleven subwatershed work plans covering 919,750 acres had been approved for installation. All work had been completed in three of these - the Tumbling Run and the Gap Run subwatersheds in Virginia, and the Warm Springs Run subwatershed in West Virginia. Installation work was continuing in the Dry Run, Lower North River, Upper North River and South River subwatersheds in Virginia, and the Lunice Creek, New Creek - White's Run, South Fork, and Patterson Creek subwatersheds in West Virginia.

Land treatment work is progressing well. For example, in the South Fork subwatershed, 80% of the land treatment work is completed; in the Patterson Creek subwatershed, 25% of the land treatment work is completed after less than 3 years of operations. A high proportion of land in the Potomac is devoted to woodland use, and the improvement and protection of woodlands is

a significant feature of subwatershed work plans. Forestry measures installed on private lands cumulatively through June 30, 1965, with technical assistance provided by the State Divisions of Forestry in cooperation with the Forest Service, include 13,869,000 trees planted on 14,272 acres (1,853 acres critical areas); 11 forest fire lookout towers; 24 forest fire tool caches; 11,665 acres of hydrologic stand improvement; 192.9 miles of skid trail and logging road erosion control; 43,038 acres of timber marked; and 31,693 acres harvested under approved cutting and logging practices; 4,445 management plans prepared involving 294,668 acres; and 45,115 acres of woodland grazing control, including 209.8 miles of fencing. Technical assistance has been provided to 9,150 landowners and 2,008 timber operators. Principal accomplishments to date on National Forest lands include 5.3 miles of stream channel stabilization involving the construction of gabions for six weirs, 61 walls and 33 groins; 80 acres of tree planting; 29.8 miles of skid trail and logging road erosion control; 5,949 acres of hydrologic stand improvement; and 42.6 acres of slide stabilization.

During the fiscal year 1965, four floodwater retarding structures were completed. One was a multiple-purpose structure that includes water supply for the community of Fort Ashby, West Virginia. To June 30, 1965, forty-four floodwater retarding structures, including two multiple-purpose structures, had been completed. Eleven floodwater retarding structures were under construction on July 1, 1965. One is a multiple-purpose structure that includes municipal water supply for the city of Staunton, Virginia. Sixteen additional structures are scheduled for contracting in the fiscal year 1966.

Direct and indirect benefits of this project are illustrated by the following events in the South River subwatershed, Augusta County, Virginia:

1. The height of a recently built highway bridge was reduced because of decreased flood hazards. A large industry, which was subject to flooding, has practically eliminated its standby flood control readiness crew and measures.
2. Early in 1965 a copper tubing industry established in the area. This plant uses water for cooling metals. It now employs 60 people and plans to enlarge to employ 160. These workers come from nearby farms.
3. Drainage and irrigation have caused a utilization of the floodplains along the river to produce forage for livestock. This has resulted in economical farm operations, and has reduced the concentration of row crops on uplands.
4. Waynesboro lies on both sides of South River. The Mayor of Waynesboro said, "This watershed has meant millions of dollars to Waynesboro because of development due to lack of flooding."
5. Sherando Lake has been developed by the U.S. Forest Service as a public recreation area and a Boy Scout Camp for the District Boy Scouts of America. The use of this area has increased each year and new facilities are being continually added. The Kiwanis Club Lake is increasing in usage.

Santa Ynez River Watershed, California

Estimated total Federal cost	\$10,718,000
Total obligations through June 30, 1965	5,841,121

The Santa Ynez Project covers 576,000 acres, of which about 10% is in the westerly portion of the basin where the Soil Conservation Service is currently installing works of improvement. Work in this portion of the watershed is scheduled for completion in the fiscal year 1966. Forest Service activities are concerned with fire prevention and control and installation of land treatment measures in national forest and other forested areas in the mountainous western portion of the watershed. Work in this portion is scheduled for completion by 1971.

A major problem in the project area is floodwater damage to farm lands which are intensively used for vegetable and flower seed production. Flood flows also cause damage to homes, highways, railroads, and multi-million dollar defense installations. Structural measures are designed to prevent degrading of entrenched gullies and to confine floodwater to improved channels across the flood plains. Land treatment measures, including fire prevention, are applied to prevent erosion and to improve soil fertility.

More than 97% of the land treatment measures in the Soil Conservation Service portion of the watershed have been applied. Of the 240 operating farms in the subwatersheds, 142 are district cooperators, 139 of which have basic conservation farm or ranch plans. Most significant land treatment measures installed to date include 5 debris basins, 44.9 miles of diversions, 178 farm ponds, 412 grade stabilization structures, and 28,500 acres of proper range use.

Planned structural measures on six of the nine subwatersheds have been completed and planning is now underway on another subwatershed. Due to low benefit to cost ratios, no structural measures are proposed in two subwatersheds. Structural measures completed as of this date include 23 miles of floodwater diversions and floodways, 98 grade stabilization structures, 7 debris basins, 3.4 miles of streambank protection, 3.8 miles of stream channel improvement, and 49 structures for water control. Easements and rights-of-way valued at \$357,600 have been recorded for 74 parcels of land for structural measures installed. In addition, the moving of utilities, construction of bridges, and other non-Federal costs have amounted to \$173,760.

The major accomplishment of the Forest Service in the fiscal year 1965 was operation and maintenance of the fire prevention and control program. Installations completed during the year included the construction of 10.4 miles of fire roads, trails and breaks, and 3 buildings for housing fire crews and equipment. In addition, 3.1 miles of telephone lines were installed.

No major storms occurred during the fiscal year 1965. Structural measures have functioned as planned, affording protection to valuable farm land, homes, and major roads to defense installations. Control of the Coyote Fire

was greatly aided by project fire protection improvements such as preplanning, firebreaks, helispots, trails, radios, motorized equipment and trained personnel. This fire started about 4 miles outside the project area and burned 40,880 acres within the Santa Ynez watershed before being brought under control. At the start of the fire and for several days thereafter fire conditions were extreme. As soon as these conditions improved the fire was soon controlled with project facilities playing an important part.

Trinity River Watershed, Texas

Estimated total Federal cost	\$92,600,889
Total obligations through June 30, 1965	45,043,724

The authorized area of the Trinity River Project consists of the upper 8,424,260 acres of the Trinity River watershed. The principal problems are floodwater and sediment damage to agricultural lands, practically all of which are privately owned. Sponsors are the local soil conservation districts and, in most instances, county units of government. To date, work plans have been developed on 25 subwatersheds covering an area of approximately 5,829,274 acres.

More than 67 percent of the planned land treatment had been applied as of June 30, 1965. Of the 38,732 operating units in the watershed, 25,626 are district cooperators and 23,884 have basic conservation plans. Good progress has been made in the application of land treatment measures in most watersheds.

A total of 527 floodwater retarding structures have been installed. Construction has been completed on approximately 36.5 miles of stream channel improvements. Eighty-seven floodwater retarding structures and 12.6 miles of channel improvement are scheduled for construction during the 1966 fiscal year.

Nineteen County Commissioners Courts have entered into agreement to cosponsor projects in the Trinity watershed to assist other sponsoring organizations in carrying out local responsibilities for operation and maintenance and obtaining easements needed for structural measures. Easements and rights-of-way, valued at \$6,800,000, have been secured by the sponsoring local organizations. It is estimated that about 4,952 easements will be required to clear the presently planned 1,101 floodwater retarding structures in the authorized Trinity River Watershed. Of this number, 3,268 have been secured.

The effectiveness of installed project measures was demonstrated on several occasions during the past year. For example, a general storm lasting 2 days and depositing up to 8.0 inches of rain occurred in November 1964, on Elm Fork Watershed. It is estimated that the 34 completed structures above Gainesville prevented over \$100,000 in damages.

A major storm occurred in the Sister Grove and East Fork Above Lavon watersheds on September 20-21, 1964. Over 12 inches of rainfall fell over parts of these watersheds. Seventy-seven of the 111 structures planned in these watersheds were constructed at the time of the storm. These structures, along with applied land treatment measures, reduced floodwater, sediment, and erosion damages by approximately \$155,000 in the two watersheds. In Collin County, it was estimated that road and bridge damages were approximately 25 percent of damages expected had there been no structures on Wilson and Honey Creeks in the East Fork Above Lavon watershed. The bridge on U. S. Highway 75 at Wilson Creek, protected by the project, suffered very minor damage. This compares to road and bridge damage on Rowlett Creek, with only minor protection, where it was estimated at least \$50,000 in damages occurred. This difference in damages was attributed directly to the watershed program.

Rainfall on Waxahachie Creek, a tributary of Chambers Creek, averaged about 10 inches during the period May 10-17, 1965. Flooding in the Waxahachie City limits was prevented by the 17 structures completed in the watershed. During the May rains, works of improvement on Post Oak Creek, a tributary to Chambers Creek, prevented flooding of residential areas in Corsicana.

Other project benefits are illustrated in the Elm Fork watershed where a total of 41 floodwater retarding structures has been completed. Approximately 21,000 visitors enjoy the project recreational aspects each year. Based on information where fees are charged, this represents a direct monetary benefit of over \$14,000 annually. Indirect associated recreational spending is several times more. Another example is Site 6 of Grays Creek watershed. Excellent camping sites have been developed, and picnic tables, barbecue pits, piers for swimming and fishing, bath houses, and bait boxes are available. This past year, the lake furnished one of the few dependable water supplies in the area, and many farmers hauled water daily from it.

Washita River Watershed, Oklahoma and Texas

Estimated total Federal cost	\$74,950,559
Total obligations through June 30, 1965	50,540,599

The authorized area of the Washita River Flood Prevention Project covers 5,095,040 acres. About 94 percent of the authorized area is in Oklahoma and 6 percent is in Texas.

Local sponsors of each subwatershed are soil and water conservation districts, watershed associations, county commissioner's courts, and city councils. Guidance is furnished by the Washita Council. The problems include upland erosion and floodwater and sediment damages on 265,000 acres of bottomland. There are 112,000 acres along the main stem of the Washita needing protection.

Seventy-five percent of the farmers and ranchers in the Washita watershed have soil conservation plans with their local districts. More than two-thirds of the needed soil conservation practices have been applied on the land. Eighty percent, or more, of the land treatment has been installed on most watersheds where the works of improvement are constructed. The district governing bodies continue emphasis on the importance of a complete soil and water conservation program on each acre of land.

Work plans have been completed on 79% of the authorized project areas as of June 30, 1965. Planned structural measures include 981 floodwater retardation dams, 13 multiple-purpose reservoirs, 300 miles of channel improvement, and 145 land stabilization structures. Works of improvement completed or under contract includes 740 floodwater retarding structures, 7 multiple-purpose reservoirs, 130 land stabilization structures and 25 miles of channel improvement. All structural measures in the Texas portion of the watershed were completed in fiscal year 1964.

Easements continue to be secured at an adequate rate to meet scheduled construction commitments. On Sugar Creek, which has about 30% restricted Indian land, the Bureau of Indian Affairs provides financial aid for easement cost in proportion to the amount of protected Indian land. The Oklahoma State Conservation Board's revolving fund continues to assist subwatersheds after 90% of the easements are secured.

Benefits from the flood prevention program in the Washita are illustrated by the following examples from subwatersheds where works of improvement have been installed:

1. The last of 69 structures on the 187,000 acre Barnitz Creek Watershed was completed in 1958. Since that time not one acre of crops has been destroyed as a result of flood water in the entire flood plain protected by structures. Fence damage due to flooding has been almost eliminated. The rotation of crops has been much enhanced. One cooperator in the Arapaho area says that harvest is no longer a difficult problem because of wet ground.
2. In Wildhorse Creek, a 428,000 acre tributary of the Washita River in southern Oklahoma near Duncan, a seed and grain dealer says, - "Nothing since the oil field boom has affected the economy of this county so greatly. This program has meant more to the income of the farmers and ranchers on Wildhorse Creek than anything that could possibly have happened. There is no doubt in my mind that every business in Marlow and Duncan has felt the influence of this program through increased revenues. This is one of the major factors that has made this county the second largest in livestock population and production ***." A county commissioner says, - "Before we had flood control dams in my district, we spent 15 to 20,000 dollars a year in replacing

bridges and washed out roads. Every three to five years this was really a major problem for the county commissioners who had to work with Wildhorse Creek and the other creeks that run into Wildhorse. We have taken the money that was used for road and bridge repairs and have spent it on road improvement and equipment. This meant that we were able to put down 200 miles of black-top road in my district alone ***."

Yazoo River Watershed, Mississippi

Estimated total Federal cost	\$57,636,473
Total obligations through June 30, 1965	32,478,690

The authorized area of the Yazoo River Project includes 3,222,400 acres of which 227,975 are publicly owned. The principal problems are floodwater and sediment damages to agricultural lands. About 39% of the watershed is in woodland, 25% in cropland, 14% in pasture, and 22% miscellaneous uses, idle, and reservoirs. The entire watershed is covered by 16 soil conservation districts.

Of the 18,156 operating units in the watershed, as of June 30, 1965, 14,522 were cooperating in their soil conservation district programs, and 11,580 of these had developed basic conservation plans on 1,912,255 acres. The major land treatment measures installed include 298,558 acres of conservation cropping systems; planting of 372,622 acres of critical lands to grasses, legumes, and trees; pasture planting on 283,918 acres; construction of 1,218 miles of diversions; and construction of 7,299 debris basins for control of sediment.

In fiscal year 1965 approximately 24.2 million trees were planted on 26,700 acres, including 25,069 acres of critically eroding land. About 12 miles of fencing were installed to protect 1,970 acres of woodland from domestic livestock. Hydrologic stand improvement for retarding runoff was conducted on 10,095 acres of poor woodland. Technical assistance was given to 2,543 landowners involving 104,707 acres of woodland. About 20 miles of roadside erosion control was accomplished within the National Forest area.

As of June 30, 1965, a total of 118 floodwater retarding structures had been completed, and 44 were under contract. Other structural measures completed include 86 large stabilization and sediment control structures and 926 miles of stream channel improvement.

Good progress was made during the fiscal year 1965 in securing easements. Easements were cleared for 36 floodwater retarding structures and about 40 miles of channel improvement. Abiaca, Pelucia, Big Sand, and Potococowa Drainage Districts in Carroll County expect to obtain remaining easements for 16 dams during this fiscal year. Yalobusha and Toposhaw Drainage Districts are expected to complete loans and secure easements for a large segment of channel improvement by January 1966.

Emergency Measures

Funds under this appropriation are available for the emergency treatment of watersheds impaired by fire or other similar disasters to prevent loss of life or serious flood and sediment damage. Seven such watersheds involving 96,610 acres of newly burned lands were treated during the fiscal year 1965 at a cost of \$876,400.

In addition to the \$300,000 of Flood Prevention funds which may be expended during any one fiscal year for emergency measures for run-off retardation and soil erosion prevention, the Supplemental Appropriation Act of 1965 appropriated \$900,000 for this purpose. This made it possible to complete emergency watershed treatment work on the Coyote fire which threatened Santa Barbara, California and neighboring communities including their water supply.

All of the areas treated were located in southern California. Approximately 927,400 pounds of rapid growing mustard, rye grass, brome, and other grasses were sown by helicopter to provide a protective cover quickly on most of the burned area. Eight small channel debris and erosion structures were also constructed and 50 miles of emergency fire control roads and trails were stabilized to reduce flood sediment and debris loads.

Progress in Basic Data Collection

The Southern Forest Experiment Station of the Forest Service continued work on the development of techniques for the management of erosive forest watersheds within the Yazoo-Little Tallahatchie Projects. This work is devoted to (1) determining special management requirements to prevent watershed deterioration under use, and (2) testing management practices to prevent new cycles of watershed deterioration.

The project involves the collection, analysis, and interpretation of basic run-off data and erosion conditions as related to slope and forest cover conditions in the Little Tallahatchie and Yazoo Flood Prevention Projects in Mississippi. The collection of basic data is done by Forest Service personnel assigned to these projects. Analysis and interpretation is being done by the experiment station as a contribution to the project program.

Loans and Related Expense

Under authority of Section 8 of Public Law 566, 83d Congress, as amended, loans are made to local organizations to finance the local share of the cost of installing planned works of improvement in the 11 authorized Flood Prevention watersheds. The Farmers Home Administration is responsible for making these loans. The loans are made for acquisition of land, easements, and rights-of-way which the local organizations find they must purchase, and for the allocated local share of the cost of multi-purpose projects,

including organizational expenses and legal costs. To date, 12 loans amounting to \$2,490,500 have been approved to local sponsoring organizations in the 11 authorized watersheds. There are seven applications on hand for loans totalling \$540,000.

The following tabulation shows the status of the Flood Prevention loan program and amounts obligated or estimated to be obligated for loans to local sponsors of subwatersheds in the eleven authorized flood prevention projects:

Explanation	1965 Actual		1966 Estimate		1967 Estimate	
	Number	Amount	Number	Amount	Number	Amount
1. Applications on hand at beginning of year	6	495,000	6	470,000	4	220,000
2. Applications received during year	4	320,000	7	700,000	10	1,000,000
3. Total applications for consideration during year ...	10	815,000	13	1,170,000	14	1,220,000
4. Loans obligated during year	4	345,000	9	950,000	9	950,000
5. Loans closed during year (disbursements)	(3)	(265,000)	(12)	(1,480,000)	(9)	(950,000)
6. Applications withdrawn or disapproved	0	0	0	0	0	0
7. Applications pending at end of year	6	470,000	4	220,000	5	270,000
8. Loans obligated end of year (cumulative)	12	2,490,500	21	3,440,500	30	4,390,500



(e) Great Plains Conservation Program

Appropriation Act, 1966	\$16,000,000
Proposed supplemental, 1966, for increased pay costs	<u>82,000</u>
Base for 1967	16,082,000
Budget Estimate, 1967	<u>16,112,000</u>
Increase (to provide for full year costs of pay increases pursuant to P.L. 89-301)	<u>+30,000</u>

PROJECT STATEMENT

Project	1965	1966 (estimated)	Increases and Decreases:			1967 (estimated)
			Increased Pay Costs (P.L. 89-301)	Other		
1. Great Plains Conservation Program:						
a. Cost-sharing assistance ...	\$11,436,000	\$12,500,000	- -	- -		\$12,500,000
b. Technical services and related expense	3,427,803	3,582,000	+\$30,000 (1)	- -		3,612,000
Total increased pay costs (P.L. 89-301)	- -	(82,000)	(+30,000)	- -		(112,000)
Total available or estimate	14,863,803	16,082,000	+30,000	- -		16,112,000

(1) An increase of \$30,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An over-all explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

The following table reflects carryover into 1966 of available 1965 unobligated balances and estimated obligations:

PROJECT STATEMENT
(On the basis of available funds)

Project	: 1965	: 1966	: Increase	: 1967
	: Obligations:	: (estimated):	: or Decrease	: (estimated)
1. Great Plains Conserva-	:	:	:	:
tion Program:	:	:	:	:
a. Cost-sharing as-	:	:	:	:
sistance	:\$11,660,349:	\$12,603,165	:-\$103,165(1)	:\$12,500,000
b. Technical services and	:	:	:	:
related expense	: 3,189,305:	3,582,000	: +30,000	: 3,612,000
Total increased pay costs	:	:	:	:
(P.L. 89-301)	: - -	: (82,000):	: (30,000)	: (112,000)
Subtotal (obligations).	: 14,849,654:	16,185,165	: -73,165	: 16,112,000
Unobligated balance start	:	:	:	:
of year	: -89,016:	-103,165	: +103,165	: - -
Unobligated balance end	:	:	:	:
of year	: +103,165:	- -	: - -	: - -
Total available or estimate	: 14,863,803:	16,082,000	: +30,000	: 16,112,000

- (1) The decrease in obligations of \$103,165 represents the unobligated balance available in the fiscal year 1966 that are estimated to be available in 1967.

STATUS OF PROGRAM

Current Activities: The Great Plains Conservation Program was authorized under Public Law 1021, 84th Congress, (16 U.S.C. 590p) to provide program participants in the critically erodible areas of the Great Plains with assured cost-sharing and technical assistance. The program is designed to protect, improve, and conserve the soil, water, plant, and wildlife resources of this vast agricultural area and help to stabilize its economy. The work supplements other soil and water conservation programs and activities in counties designated by the Secretary. It is also coordinated with the programs and objectives of locally managed conservation districts, State agencies, and community groups.

Type of Assistance Furnished by the Department

The assistance furnished under this appropriation to participating farmers and ranchers in ten Great Plains States consists of the following:

1. Cost-shares for installation of permanent-type conservation practices under provisions of long-term contracts. Each plan of operations for the farm or ranch unit shows the planned changes in land use and cropping systems, a time schedule of the conservation work to be done, and the cost-shares to be paid for the installation of practices specified. Contracts may cover periods of 3 to 10 years. Cost-share funds are obligated when each contract is signed. This guarantees the availability of cost-shares to help each participant finance installation of needed conservation practices within the specific time periods scheduled.
2. Technical services of soil conservationists, engineers, and other agricultural specialists to help plan and install sound conservation programs adapted to the particular needs and land capability of each farm or ranch. These services include:
 - a. Help with practical schedules for applying conservation treatment measures, including a technically sound basis for cost-share contracts. These are generally developed from conservation plans prepared under the Conservation Operations program. Some program participants, however are not conservation district cooperators, but are given help under this program in developing plans of operation for their land.

The conservation plans and schedules provide for orderly adjustments in land use, application of needed conservation treatments within specified time, and use of improved management techniques. Assistance is also given periodically, as needed, in revising plans and schedules, and in modifying cost-share contracts.

b. Help with installation of planned conservation treatment measures.

The farmer or rancher is responsible for carrying out his plan of operation as scheduled in his contract. Installation help is provided when needed for detail designs, practice layout, topographic surveys, and site selection. Technical supervision of construction, and other assistance is furnished in applying conservation practices and helping to improve each farm or ranch enterprise in accordance with the plan.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the Great Plains Conservation Program. A continuing inter-agency Departmental committee, designated by the Secretary, recommends program policies, procedures, and regulations to assure coordination of Departmental activities in the Great Plains area. This Committee consists of representatives from ten Departmental agencies or offices concerned with various parts of the program. State and County Program Committees also help to coordinate program operations in the respective States and to adapt its provisions to their specific needs.

Counties Designated for Program Participation

As of November 17, 1965, the Secretary had designated 395 counties in the 10 Great Plains States as eligible to participate in the Great Plains Conservation program. The number of designated counties in each State is as follows:

Colorado	36	North Dakota	30
Kansas	55	Oklahoma	20
Montana	36	South Dakota	36
Nebraska	58	Texas	98
New Mexico	17	Wyoming	9

Determination of a county's eligibility for participation in the program is based on the needs and the interest of local people. The physical factors for consideration include susceptibility of the land to serious wind erosion, and the need for changes in land use, cropping systems, and grassland management. The responsibility for developing procedures to determine local interest in the program rests with the State Program Committee. Their procedures may include public hearings, petitions of land owners and operators, resolutions by groups, and requests of county leaders interested in the conservation of land and water resources.

A map delineating the designated counties follows:



Selected Examples of Recent Progress:

Agency Participation

The following table shows funds obligated under the Great Plains Conservation Program in 1965 by agency and estimates for 1966 and 1967:

Item and Agency	: 1965	: 1966	: 1967
	: Obligations	: Estimate	: Estimate
Cost-Share Payments:			
Soil Conservation Service .	\$11,660,349	\$12,603,165 ^{a/}	\$12,500,000
Technical Services and Related:			
Expense:			
Soil Conservation Service :	3,080,185	3,457,000	3,476,000
Agricultural Stabilization:			
and Conservation Service:	73,770	77,000	77,000
Economic Research Service :	--	21,000	41,000
Forest Service	20,105	10,000	--
Office of Information ...	15,245	17,000	18,000
Subtotal	3,189,305	3,582,000	3,612,000
Total	14,849,654	16,185,165	16,112,000

^{a/} Includes \$103,165 unobligated balance brought forward from the prior year.

Changes in Land Use Needed

Much of the Great Plains is suited to production of cultivated crops when needed conservation measures are properly applied. There are, however, some 11 to 14 million acres of land in cultivation that are not suited to such use due to soil type, topography, and low rainfall. Concentrated efforts are being made under this program through technical and cost-sharing assistance to help landowners and operators make needed land use changes. Soil surveys are used to get the needed land facts. Much progress is being made by program participants in getting land unsuited for cultivation converted to permanent vegetative cover, and to reseed denuded rangelands.

Cost-share contracts as of June 30, 1965 include 5,880,234 acres which were being used as cropland at the time the contracts were signed. The plans of operation developed and made a part of the contracts provided for the conversion of 1,299,568 of these acres (about 22.7%) to permanently vegetated rangeland or other noncrop uses. The percentage of cropland conversions ranged from 10.0% in Kansas to 31.8% in South Dakota. During the fiscal year 1965, farmers and ranchers actually completed the establishment of 164,340 acres of permanent vegetative cover and reseeded 96,026 acres of deteriorating rangeland for which they received assistance under their cost-sharing contracts.

Aiding Rural Areas Development

Lands in the Great Plains area are being converted to vegetation and range uses, rather than production of surplus commodities such as wheat or cotton. The conservation treatments installed generally assure higher levels of farm income. For example, a one-step increase in range condition will usually produce 10 to 15 more pounds of beef per acre. Such a small improvement in available forage can mean the difference between net profits and a loss for some range units, especially where marginal farming systems can be changed to improved grasses. The assistance furnished under this program provides for a well-planned conservation program systematically applied. It is effective in stabilizing many low-income farm and ranching enterprises.

Twenty-four soil and water conservation practices are eligible for cost-sharing under the Great Plains Conservation Program. Cost-share rates authorized for these practices vary from 50 to 80 percent of the estimated average cost to program participants of installing these practices. Cooperating farmers and ranchers generally pay about 35 percent of the program costs for contracted practices installed. Each participant also pays the entire installation cost for any practices which are not cost-shared and is responsible for all practice maintenance. The cooperators forego the use of certain lands temporarily while planned practices are being established. These kinds of investments are of substantial benefit to the land.

Technical Assistance Workload Increasing

Technical assistance with the installation of planned practices is programmed on a long-term basis as well as annually. This is to assure availability of needed services when contracted practices are scheduled for installation. The technical workload associated with practice installation pyramids from year to year as more participants enter the program. This will continue until long-term cost-sharing contracts are expiring at about the same rate as new contracts are being signed. In the fiscal year 1965, there was a net increase of 2,245 between new contracts signed and those which were terminated or expired.

Assignment of staff in work units to service Great Plains contracts has been primarily on a part-time basis in most counties. In 1965, about 365 man-years were used for technical services. Technical time financed with funds provided under this appropriation averaged less than one man-year per county. The number of counties where the level of program operations will require the full-time services of one or more technicians is increasing as the need for installation services increase.

Applications for Assistance
and Cost-Share Contracts

Interest in the Great Plains Conservation Program continues to increase and good progress is being made. The following table shows facts and projections on applications for program assistance and cost-share contracts:

Explanation	1965 Actual	1966 Estimate	1967 Estimate
Applications for assistance received:			
Current fiscal year	3,925	4,232	4,500
Cumulative to June 30	24,268	28,500	33,000
Contracts signed:			
Current fiscal year	3,729	4,044	4,000
Cumulative to June 30	19,956	24,000	28,000
Acreage in contracts:			
Current fiscal year	5,290,996	5,772,257	5,700,000
Cumulative to June 30	39,227,743	45,000,000	50,700,000
Unserviced applications:			
Number	4,312	4,500	5,000
Acreage	10,345,806	10,500,000	11,000,000

The average size of farm and ranch units placed under contract in the fiscal year 1965 was 1,415 acres, while all units placed under contract through June 30, 1965, averaged 1,966 acres. There has been a gradual reduction in average size of land units placed under contract in recent years. The following table shows the status of cost-share contracts as of June 30, 1965:

Explanation	Number	Acres
Contracts signed	19,956	39,227,743
Contracts terminated:		
By mutual consent	370	720,975
For cause	394	352,491
By expiration	4,060	6,353,269
Total terminations	(4,824)	(7,426,735)
Active contracts	15,132	31,801,008

Practices Applied and Cost-Shares paid

The following tabulation shows the cost-shared practices applied under the Great Plains Conservation Program and related cost-share payments:

Great Plains Practices	Unit	Extent Applied		Cost-Shares Paid	
		Fiscal Year	Cumulative	Fiscal Year	Cumulative
		1965	6/30/65	1965	6/30/65
		Amount	Amount	Dollars	Dollars
<u>Initial Application</u>					
Establish permanent vegetative cover	:Acres:	164,340	800,447	\$1,304,280	\$6,376,444
Establish field stripcropping.....	:Acres:	66,982	275,605	84,810	367,663
Establish contour strip-cropping.....	:Acres:	11,765	80,689	44,189	333,536
Establish contour farming.....	:Acres:	1,458	2,996	2,460	4,581
Reseeding rangeland.....	:Acres:	96,026	590,608	787,534	3,783,890
Establishment of windbreaks.....	:Acres:	2,369	14,204	148,946	683,024
Establish permanent sod waterways	:Acres:	2,769	12,825	294,520	1,195,103
Terrace Construction	:Miles:	5,388	25,891	1,095,112	4,421,695
Diver, terraces, ditches, dike	:Miles:	425	2,026	193,154	901,668
Furrowing, Chieseling, ripping, etc.....	:Acres:	41,732	158,579	43,214	178,092
Dams for erosion, cont., detention.....	:No.:	2,617	12,814	304,876	1,883,016
Channel lining, chutes, drop spill.....	:No.:	260	1,124	59,507	287,366
Streambank protection, etc.....	:L.ft.:	77,676	135,269	5,349	39,342
Spreader ditches and dikes.....	:Acres:	8,629	56,036	187,547	1,195,143
Reorganizing irrigation systems.....	:No.:	364	1,834	555,540	3,085,859
Leveling land.....	:Acres:	17,536	74,278	524,296	2,457,752
Dams, pits, or ponds for irrigation	:No.:	43	217	40,231	250,858
Lining irrigation ditches	:L.ft.:	241,122	892,454	181,867	753,279
Wells for livestock water	:No.:	1,640	6,567	794,747	3,452,171
Developing springs and seeps	:No.:	122	542	37,704	134,940
Dams, pits, or ponds for vegetative cover	:No.:	2,122	10,278	887,576	5,077,510

Practices Applied and Cost-Shares Paid - Cont'd

Great Plains Practices	:	Unit	Extent Applied		Cost-Shares Paid	
			Fiscal Year	Cumulative	Fiscal Year	Cumulative
			1965	6/30/65	1965	6/30/65
			Amount	Amount	Dollars	Dollars
Pipelines for livestock	:					
water	:	Miles:	363	1,309	335,248	1,268,734
Controlling competitive	:					
shrubs	:	Acres:	345,617	2,243,579	915,993	5,702,162
Constructing permanent	:					
fences	:	Miles:	821	4,150	278,962	1,385,053
<u>Reapplication</u>	:					
Establish permanent	:					
vegetative cover	:	Acres:	8,287	41,540	58,579	237,700
Establish contour	:					
stripcropping	:	Acres:	-	25	-	117
Reseeding rangeland.....	:	Acres:	3,101	18,561	22,841	115,692
Establishment of wind-	:					
breaks	:	Acres:	249	1,447	8,860	34,230
Establish permanent sod	:					
waterways	:	Acres:	252	729	3,546	10,754
Terrace Construction.....	:	Miles:	285	520	31,501	54,085
Diver, terraces, ditches,	:					
dikes	:	Miles:	1	1	67	88
Dams for erosion, cont.,	:					
detention	:	No.:	2	7	560	1,318
Channel lining, chutes,	:					
drop spill.....	:	No.:	-	4	-	708
Streambank protection,	:					
etc.....	:	L. ft:	-	600	-	7,761
Spreader ditches and	:					
dikes	:	Acres:	339	619	3,131	9,655
Leveling land.....	:	Acres:	20	144	349	2,604
Dams, pits, or ponds for	:					
irrigation.....	:	No.:	1	1	570	750
Wells for livestock water	:	No.:	8	21	2,026	8,418
Dams, pits or ponds for	:					
vegetative cover.....	:	No.:	1	13	565	3,480
Controlling competitive	:					
shrubs	:	Acres:	2,193	6,662	4,481	11,946
Total	:	xxxxxx:	xxxxxxxxxx	xxxxxxxxxx	\$9,244,737	\$45,718,184

Land Damaged by Wind Erosion
1964-1965 Blow Season

Local estimates for 202 counties indicate 3,902,836 acres damaged compared to 4,295,937 acres reported by 183 counties a year ago, a decrease of 393,101 acres. Land damaged this season includes 3,285,616 acres of cropland, 553,550 acres of rangeland, and 63,670 acres of other land. The Southern Plains States reported 3,125,810 acres (80%) and the Northern Plains States 777,026 acres (20%).

Acres of Land Damaged

Great Plains States	Co's.	Cropland	Range-land	Other Land	Total Land	
	Rptg.					5-31-65
	(No.)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
<u>Northern:</u>						
Montana	15	72,390	2,500	500	75,390	427,452
Nebraska	15	420,900	49,000	1,500	471,400	29,950
North Dakota	17	22,200	- -	- -	22,200	26,965
South Dakota	17	157,046	1,450	1,020	159,516	22,980
Wyoming	10	24,600	20,100	3,820	48,520	35,760
Subtotal	74	697,136	73,050	6,840	777,026	543,107
<u>Southern:</u>						
Colorado	8	104,900	12,600	500	118,000	2,065,000
Kansas	36	614,700	15,900	500	631,100	648,300
New Mexico	10	97,500	69,760	200	167,460	87,400
Oklahoma	15	154,200	2,100	1,100	157,400	263,750
Texas	59	1,617,180	380,140	54,530	2,051,850	688,380
Subtotal	128	2,588,480	480,500	56,830	3,125,810	3,752,830
Grand Total	202	3,285,616	553,550	63,670	3,902,836	4,295,937

Soil Moisture Conditions by States

MONTANA - Deep snow cover was an important factor in keeping land damaged during the year to a minimum. Soil moisture generally good throughout the State at the close of the season.

NEBRASKA - Soil moisture generally low until the middle of May. Inadequate moisture resulted in little or no ground cover during the winter. Very few windstorms occurred.

NORTH DAKOTA - Good to excellent soil moisture throughout the State. Damage from wind kept to a minimum this season.

SOUTH DAKOTA - Land damaged increased considerably from winds in the middle of March and May. Rains occurring late in the season resulted in much improved soil moisture conditions.

WYOMING - Emergency tillage and seeding of emergency crops have reduced the hazards of increased wind damage. Variable moisture conditions existed during the season but generally adequate at the close.

COLORADO - Wind and drought have destroyed approximately 80 percent of the dryland wheat crop. Essentially no dryland wheat harvest in Kiowa, Lincoln, Cheyenne, Baca, and Prowers Counties. Emergency tillage was the only protection on some 2,225,000 acres. Land damage considerably less than a year ago.

KANSAS - Twelve Southwest counties reported 92 percent of wind damage reported. Moisture conditions poor in Southwest part with poor growth on wheat and grasses.

NEW MEXICO - Rains late this blow season changed the situation from critical to encouraging. Frequent wind storms in March, April, and early May caused considerable land damage.

OKLAHOMA - Land damaged this season is 106,350 acres less than a year ago. Most counties reported soil moisture adequate at the close of the season.

TEXAS - Land damaged the last three month period is less than a year ago although total damage for the season is three times the acreage reported a year ago. The greatest damage this season was reported in the Big Spring area.

Resume of Wind Erosion Conditions
for the 1964-65 Season

Northern Great Plains - Seventy-four counties in the Northern Great Plains States reported 777,026 acres of land damage this season compared to 543,107 acres reported by fifty-seven counties a year ago. Nebraska reported the greatest acreage (471,400) of land damage. Nebraska, South Dakota, and Wyoming all reported greater land damage than was reported a year ago. Soil moisture was low in Nebraska going into the winter, there was generally little snow cover, and erosion resistant cover was essentially nonexistent. Rains in late May improved moisture conditions in all of the Northern Great Plains States.

Southern Great Plains - Land damage reported by 128 counties this season was 3,125,810 acres compared to 3,752,830 acres reported by 126 counties a year ago. Texas reported the greatest acreage (2,051,850) of land damage this season. The greatest damage in Texas occurred in late January. The January storm was reported to be the worst in 10 years. Only Texas and New Mexico reported increased land damage over amounts reported a year ago. Colorado reported a considerable reduction from a year ago although some areas experienced severe damage this season. Timely and widespread emergency tillage had a considerable effect on reducing wind erosion in Colorado this season.

Examples of GPCP Accomplishments

Program puts Montana rancher's enterprise on sound footing: A cooperator with the Judith Basin Soil and Water Conservation District was one of the first in Montana to enter the Great Plains conservation program. He was tired of trying to grow wheat on the 460 acres of rocky, sloping cropland, machinery repairs were expensive, and he became discouraged when he figured income and expenses. His best yields were under 15 bushels per acre. Improvement of his native range appeared to be the solution to his problem. He entered the program, developed his plan with the technical help of the SCS and started treatment work in 1958. By 1960 he had seeded 153 acres to grass and alfalfa, developed two springs, and built 200 rods of cross-fencing. In 1962 he added two stock water wells and seeded 200 more acres of cropland to native grass. His contract is completed, and his ranch is a layout of vigorous grass that will provide needed grazing for his stock. The condition of his improving native pastures is rated as "good." He paid off a Farmers Home Administration loan during the term of his contract and is buying another small unit for additional pasture. He and his family feel that at least they now are on sound footing in their ranching operation.

Nebraska rancher a producer of grass: A rancher and cooperator with the Holt (Nebr.) Soil and Water Conservation District under the GPCP insists that he is a producer of grass - - his cattle do the harvesting. He had been making good progress with his conservation work on the parcels of land he had gotten together, but he realized that with just his own resources it would take a long time to do the job required. He applied in 1961 for help under the Great Plains conservation program. Under the program, he seeded 87 acres of unsuited cropland to grass, built three stock water dams and six erosion control dams, drilled five stock water wells, built four miles of terraces with the needed grassed waterways, added two miles of cross-fencing for better grazing control, and planted 6,000 seedlings for livestock windbreaks. He runs a cow-calf yearling business and is a recognized leader in livestock circles. His conservation activity played an important part in the selection of his family as the 1965 Farm Family of the Year by the Lincoln Journal-Star newspaper.

Conversion of cropland to grass in North Dakota: With the exception of some additional acreage which he wants to plant to grass, a cooperator with the Kidder County Soil Conservation District has completed within 4 years all the steps of a conservation plan he prepared for his 1,097-acre livestock farm with SCS technical help. In 1960 he made the decision to reduce his feed grain acreage, to convert most of his cropland to grass, and to increase his cow herd to 150 head. The change would leave only 120 acres of cropland for production of feed with the expected income from the herd to offset the cropland reduction. Under the Great Plains conservation program, his plan included provision for more water in the right places for proper use of grass resources. The cooperator developed two springs and constructed three stock

water dugouts. He installed five miles of single-row tree windbreaks and a farmstead windbreak. He erected fencing to protect grass seedings and manage grazing. The cultivated land was stripcropped. When the 70 acres is planted to grass as planned, the cooperator is sure he can increase his cow herd. When the grain crop justifies, he will feed out a part of his calf crop, adjusting the number of animals each year to the condition of the grass. His installed farm plan won for him the 1964 Kidder County Achievement Award as an outstanding farmer. More importantly, it brought him a more stable income and the satisfaction of knowing that erosion is under control on his land.

Rangeland clearing and seeding pays off in Texas: Good range management has turned a 1,134-acre brush and worn-out Texas ranch into a productive enterprise for a GPCP cooperator with the Middle Clear Fork Soil Conservation District. When he bought the place, he bought the 45 cows that were grazing it, but soon had to sell 10 head because the grazing was too heavy. However, he soon saw that the grass was not supporting the remaining cattle. In 1958 he developed a Great Plains conservation program plan and put 390 acres of cropland into the Conservation Reserve Program through 1963. With technical and financial help provided under the Great Plains program, he began clearing mesquite and seeding the rangeland. He deferred use of the rangeland in 1959. In 1960 the cooperator put 20 head of mother cows on the land. The following year he added 30. Since that time, he has built the grazing population to 80 cows, a few heifers, and some horses. These are grazing the 835 acres of range, but not overgrazing. The owner root-plowed 480 acres of mesquite and seeded it to grass and pitted and seeded 165 acres of open rangeland to grass. When the GPCP cooperator bought the ranch, a friend felt he wouldn't produce enough on the place to pay the taxes. The friend saw the ranch recently and expressed amazement. "You probably couldn't haul in enough cattle to graze off that grass," he said.

These examples reflect the kind of progress being made by over 20,000 participants in the Great Plains conservation program. About 40 million acres are now included in the cost-share contracts prepared. The planned work has been completed on more than 7.5 million acres. The 15,132 active contracts as of July 1, 1965, comprise nearly 32 million acres on which soil and water conservation work is currently being done.

(f) Resource Conservation and Development

Appropriation Act, 1966	\$4,303,000
Transferred to "Operating Expenses, Public Buildings Services, General Services Administration" for space rental	-2,000
Proposed supplemental, 1966, for increased pay costs	46,000
Base for 1967	4,347,000
Budget Estimate, 1967	4,574,000
Increase	<u>+227,000</u>

SUMMARY OF INCREASES AND DECREASES

	1966 <u>Appropriation</u>	<u>Increase or Decrease</u>		1967 <u>Estimate</u>
		<u>Pay Costs</u>	<u>Other</u>	
Resource development and technical services	\$2,235,000	+\$25,000	+\$1,502,000	\$3,762,000
Project investigations and planning	612,000	+5,000	-305,000	312,000
Loans and related expense	<u>1,500,000</u>	- -	<u>-1,000,000</u>	<u>500,000</u>
Total	<u>4,347,000</u>	<u>+30,000</u>	<u>+197,000</u>	<u>4,574,000</u>

PROJECT STATEMENT

Project			<u>Increases and Decreases:</u>		
	1965	1966 (estimated)	Increased :		1967 (estimated)
			Pay Costs :	Other	
			(P.L. 89-301):		
1. Project investi- gations and planning	\$310,000:	\$612,000:	+\$5,000	-\$305,000	\$312,000
2. Resource devel- opment and tech- nical services	:1,003,000:	:2,235,000:	:+25,000	:1,502,000	:3,762,000
3. Loans and re- lated expense	:500,000:	:1,500,000:	: - -	:-1,000,000	:500,000
Total increased pay costs (P.L. 89-301)	: - - :	:(51,000):	:(+40,365)	:(-5,000)	:(86,365)
Total available or estimated	:1,813,000:	:4,347,000:	:+30,000 (2):	:+197,000 (1):	:4,574,000

INCREASES AND DECREASES

(1) A net increase of \$197,000 for planning, resource development and technical services, and loans.

In the fiscal year 1967, planning work will be started on additional resource conservation and development projects. Developmental work will be accelerated on projects which are now in the installation stage and started on the 10 projects authorized for 1966.

The 1967 budget proposes \$312,000 for project investigations and planning. Planning is now underway in the 10 additional projects authorized for 1966. Seventeen applications are on hand and local groups are preparing applications in several more areas. Most applications are from areas where an increased level of economic activity is needed to provide additional employment opportunities. Resource conservation and development projects are demonstrating their effectiveness in increasing economic activity.

An increase of \$1,502,000 is required for resource development and technical services on the 20 projects which will be underway in 1967. This increase, together with funds carried forward from prior years, will provide a total of \$4,478,927 for this work in 1967. A total of \$802,000 of the increase requested will provide for 76 man-years of additional technical staff needed to design, lay out, and supervise construction work in the 10 projects authorized for 1966. The remaining \$700,000 of the increase is needed as the Federal contribution to cooperative resource developments that are being planned in the new projects. Preparatory work also would be done for additional construction in 1968.

The share of installation costs in these projects provided by this appropriation is running at less than 1/5 the total cost of project measures. This means that for each RC&D dollar invested, State, local, and private interests are investing more than \$4 in planned resource development and utilization measures. Federal participation in planning and installation of improvements is serving as the necessary catalyst in generating local action. In RC&D project areas there are significant opportunities to improve the level of economic activity. Economic benefits from project measures are making significant contributions to the economic development of the areas. The budget estimate will permit the Department to move ahead with local sponsors in revitalizing rural communities ready to invest in their future.

The decrease of \$1,000,000 for loans would provide an appropriation of \$500,000 for loans in 1967. This is sufficient to meet needs considering availability of prior-year unobligated balances of loan funds. Estimates of need for loans in 1966 on resource conservation and development projects have been substantially reduced. Experience has shown that adequate private sources of financing were available. Furthermore, State and local agencies financed some activities for which loans were to be made. Of the \$2,357,117 available for loans in 1966, only \$900,000 are expected to be obligated. This will leave an unobligated balance of \$1,457,117 available for obligations in 1967. This amount, together with the \$500,000 new appropriation requested, would provide \$1,957,117 for loans and related expenses. This would provide an average of \$90,000 per operating project for loans, and \$157,000 for administration and related expenses in connection with the loan program. Loans are administered by the Farmers Home Administration with assistance from qualified State and local public agencies.

(2) An increase of \$30,000 to provide for the full year costs in fiscal year 1967 of the pay increase pursuant to P.L. 89-301. (An overall explanation of increases for pay act costs is included in the Preface to these Explanatory Notes in Volume 1.)

The following statement shows actual and estimated obligations, after taking into consideration the carryover of prior year balances.

PROJECT STATEMENT
(On the basis of available funds)

Project	1965	1966 (estimated)	Increase or Decrease	1967 (estimated)
1. Project investigations and planning	\$255,304	\$612,000	-\$300,000	\$312,000
2. Resource development and technical services	690,196	2,534,000	:+1,944,927	:4,478,927
3. Loans and related expenses	142,883	900,000	:+1,057,117 ^{a/}	:1,957,117
Total increased pay costs (P.L. 89-301)	- -	(51,000)	:(+35,365)	:(86,365)
Total obligations	1,088,383	4,046,000	:+2,702,044	:6,748,044
Unobligated balance start of year	-1,148,427	-1,873,044	:-301,000	:-2,174,044
Unobligated balance end of year	1,873,044	2,174,044	:-2,174,044	:- -
Total available or estimate ..	1,813,000	4,347,000	:+227,000	:4,574,000

^{a/} This entire amount is from unobligated balances brought forward from prior years.

STATUS OF PROGRAM

Current Activities: The Resource Conservation and Development Program was initiated in February 1964 under authority of Section 102 of the Food and Agriculture Act of 1962 (PL87-703) and other Departmental authorities. The Food and Agriculture Act of 1962 provided a stimulus which, when combined with existing legislation, has enabled local communities to take the leadership in developing dynamic programs of improvement and self help. The primary objective is the orderly development, improvement, conservation, and utilization of natural resources. Project operations create new employment and other economic opportunities for local people.

The basic goals are generally as follows:

1. To enable local people to initiate and sponsor a program of developing and carrying out a coordinated long-range action program of resource conservation and development specifically designed to meet the needs and conditions of their area.
2. To provide the means of coordinating and obtaining the most effective use of the Departmental and other Federal and State activities in meeting and implementing their project objectives.
3. To create a favorable investment climate, attractive to private capital, in developing new activities by means of this long-range action program which may be adjusted to fit changing needs and conditions.
4. To develop a dynamic rural community with a satisfactory level of income and a pleasing environment, through sound, well-planned improvement of resources.

A significant feature of the RC&D Program is the creation of a climate of confidence and community stability. This stimulates investment of private funds in works of improvement, new processing plants, new businesses to provide services, and private or community recreational developments associated with water resources. Project plans prepared in the 1965 fiscal year indicate the ratio of non-Federal funds to RC&D funds for project operations will be about 4.5 to 1.0. Present indications are that the actual rates of non-Federal to RC&D funds will be much higher in some projects.

Non-Federal funds and services are expected to exceed \$7 million in the 1966 fiscal year, and about \$14 million in 1967 in the first 10 pilot projects. These private, local, and State funds will be used primarily for installation of planned project measures.

Types of Assistance Furnished by the Department

Work under this program can be grouped into two general phases: (1) preparing the long-range program plans, and (2) project operations within each of the projects. A more detailed description of assistance furnished under this appropriation item follows:

1. Project investigations and planning assistance is furnished in response to requests made by local sponsoring organizations. Sponsoring groups and agencies can now use several authorities for coordinated action on the land. The planning may include acceleration or redirection of going programs and changes in land use to promote economic stability. Local programs and work plans in approved projects include many combinations and variations in treatments designed specifically to stimulate local participation.

The Department assists sponsoring groups in appraising local interests and needs, recommends scope of the work in proposed projects, and performs related duties. It also helps to revise or adjust existing local programs to include special features and provisions of the Food and Agriculture Act of 1962. Information agencies are encouraged to explain the benefits, opportunities, and advantages of coordinated action. Their releases through the press and otherwise, meetings with local groups, and discussions with prospective sponsors, indicate the kind of work which communities and participating individuals can do for themselves with the technical help and financial assistance available to them.

2. Technical and financial assistance for project operations in approved project areas including:
 - a. Making necessary soil surveys and interpretations for program development and project operations;
 - b. Technical assistance to individual land owners and operators to help plan, design, layout and install conservation practices and measures contributing to project objectives; and
 - c. Installation services and financial assistance for the installation of certain types of approved project measures contributing to project objectives.
3. Loans are made to local sponsoring agencies and groups to help finance certain approved project-type activities and measures.

Program Assignments

Administrative leadership for this program is assigned to the Soil Conservation Service. The Soil Conservation Service, Forest Service, and Economic Research Service provide primary planning assistance. The Soil Conservation Service and the Forest Service provide technical and financial assistance for project operations. The Farmers Home Administration is responsible for carrying out the loan provisions of the program.

Studies are being undertaken by Economic Research Service to determine the economic impact of installed improvements within project areas. These impact studies are designed so that economic facts obtained from them may be applicable to wider areas as well as the RC&D area in which they were developed.

In addition, other agencies of the Department of Agriculture provide financial and other assistance to these projects in accordance with their regularly assigned functions as determined by the Secretary. Coordinated action among the agencies concerned helps the project sponsors to develop the local teamwork necessary for effective project development.

Obligations of RC&D Funds in 1965 and projections for 1966 and 1967 are as follows:

Agency	: 1965 a/ : Actual	: 1966 : Estimate	: 1967 : Estimate
Soil Conservation Service	: \$776,710	: \$2,860,000	: \$4,359,927
Economic Research Service	: 72,000	: 86,000	: 136,000
Farmers Home Administration	: 142,883	: 900,000	: 1,957,117
Forest Service	: 96,790	: 200,000	: 295,000
Subtotal	: 1,088,383	: 4,046,000	: 6,748,044
Unobligated balance	: 1,873,044	: 2,174,044	: - -
Total available or estimate	: 2,961,427	: 6,220,044	: 6,748,044

a/ Includes \$1,148,427 brought forward from prior year's unobligated balance.

Selected Examples of Recent Progress:

Project Investigations and Planning

Resource conservation and development projects are locally initiated and sponsored by the governing bodies of conservation districts, in cooperation with other local groups and agencies. These projects are usually located where acceleration of soil and water conservation activities are necessary to develop the area's resources and provide additional economic opportunities to area residents. The projects generally include two or more counties which together have common ties, problems, and opportunities of development.

Project operations depend mainly upon coordinated planning of all related segments of the area, and the effectiveness of the assistance provided by cooperating Federal, State, and local agencies.

Operations during the 1964 fiscal year were limited to planning assistance in 10 pilot project areas.

During the fiscal year 1965, project sponsors completed long-range program plans for these 10 pilot project areas, totaling about 17 million acres. The Soil Conservation Service and other Departmental, Federal, and State agencies provided technical help in preparing the work plans. The Secretary has authorized Departmental agencies to provide technical and financial assistance, within their authorities and financial limitations to project sponsors in carrying out the proposed programs over a period of years. Three of the project areas were increased in size by amendments to include contiguous areas.

The Agricultural Appropriations Act for 1966 contained authorizations and funds for 10 additional pilot RC&D project areas. As new areas are approved for planning assistance, a project coordinator is assigned to the project area to assist sponsors and local leaders in developing and carrying out the long-range plan of action. Technical specialists will also be assigned as needed to help the local people develop and carry out their program of resource development and economic improvement. These newly designated project areas, covering more than 21 million acres in 10 States, are being planned with USDA assistance in the 1966 fiscal year.

The new projects are located in Kentucky, Tennessee, West Virginia, Oklahoma, Maine, Missouri, Arkansas, Montana, Alabama, and Mississippi. When planned and approved, they will bring to 20 the number of RC&D projects underway in 20 States. Secretary Freeman recently said that: "Through improved conservation, development, and use of all resources in the project areas, the general welfare of these regions will be substantially bettered as they enter into the mainstream of progress in which most of the Nation is rapidly moving today."

For example, goals for Kentucky's Tradewater River Area highlight development of 13 watershed projects under Public Law 566, recreational development on public and private land, control of the salt marsh mosquito, and abatement of water pollution.

Objectives in the Hull-York Lakeland area of Tennessee include increased emphasis on multiple-use development in small watershed projects, and further development of wood products industries, and Christmas tree, greenery and edible nut markets.

The Little Kanawha area in West Virginia is expected to sharply reduce damage from floods through greatly improved land use, and result in a more dependable water supply for area development, increased reforestation, and improved management of existing woodlands and markets for wood crops.

Oklahoma's Ozark Highlands area has potential for recreational development, establishment of additional marketing and storage facilities for fruit, berry, truck and nut crops, and hardwood timber products, and expansion of commercial nursery plants on family farms.

Maine's St. John-Aroostook RC&D goals call for development of the area's recreational potential, improvement of forest land resources, and development of local processing and marketing facilities for agricultural and forest products.

Missouri's Top of the Ozarks Rivers sponsors expect that improved timber management will increase landowners' income by \$8 million annually, and anticipated watershed development will result in reduced flood and sedimentation damage, improved water supplies, and increased recreational opportunities.

Sponsors of the Arkansas River Valley area aim to solve the economic problems of the area by developing and improving income-producing recreational resources and woodland management and by developing opportunities for greater employment in the area.

The objectives of Bitterroot Valley in Montana are to stimulate private investment and inflow of wealth into the area by increasing tourism to the scenic and historic valley, and by expanding existing industrial developments and establishing new ones.

The Coosa Valley area in Alabama has plans for the orderly development of recreation and tourism potential, expansion of markets for wood crops, increased farm income, and increased industrial and commercial employment.

In Mississippi, the Southeast Delta area is expected to obtain annual benefits of \$1,300,000 through flood prevention and improved water management, and an increase in recreation visitor days in the area by 200,000 annually with resulting increases in local employment, sales, and expandable income.

While the goals and objectives vary widely among the proposed projects, the aims are to improve the economic welfare of local people.

Resource Development and Technical Services

When each project is approved for operations, work unit and area staffs of the SCS are increased as needed to meet the added workload. This includes staff assistance with design, layout and installation of planned works of improvements, preparation of development contracts, and related soil and water conservation work on private lands within the project area. Federal and State agencies which administer public lands or have program interests that are vital to the success of the RC&D project also take part in resource development measures in the project area.

Soil surveys and related interpretations are necessary in program development and for project operations. In most areas it will be necessary to intensify the rate of mapping to get full coverage as quickly as possible. Much of the work already included in farm and ranch conservation plans contributes to the program but some revisions, especially for land use adjustments, will be necessary to take full advantage of other resource management opportunities. The planning and application of additional land treatment practices on farms and ranches will continue to be a major part of soil and water conservation district activities within these projects.

Following is a listing of the 10 pilot projects now approved for operations.

State	Project Name	Acreage	Location - Counties
Georgia	Gwinnett County	279,688	Gwinnett
Idaho-Washington	North Idaho	2,243,703	Latah, Benewah, Kootenai (Ida.) and part of Spokane (Wash.)
Indiana	Lincoln Hills	1,005,400	Crawford, Harrison, Perry, Spencer
Minnesota	West Central Minnesota Amendment	2,404,320 <u>696,714</u> 3,101,034	Swift, Kandiyohi, Pope, Wadena, Otter Tail
New Mexico	Northern Rio Grande Amendment	2,879,123 <u>263,270</u> 3,142,393	Taos, Parts of Rio, Arriba, Los Alamos, Santa Fe
Oregon	Upper Willamette Amendment	2,925,890 <u>697,240</u> 3,623,130	Parts of Lane, Benton, Douglas and all of Lane
Pennsylvania	Penn Soil	1,518,100	Crawford, Mercer, Venango
South Dakota	Bon Homme- Charles Mix	1,068,440	Bon Homme, Charles Mix
Vermont	White River	635,200	Parts of Addison, Orange Rutland, Windsor
Wisconsin	Pri-Ru-Ta	<u>2,028,800</u>	Price, Rusk, Taylor
Total area		18,645,888	

Of the ten additional projects being planned in the 1966 fiscal year, five are expected to be in operations by June 30, 1966.

The following examples are illustrative of the types of project measures which are being installed in conformity with the several project plans and schedules:

West Central Minnesota

A total of eleven project measures are completed and an additional 32 are underway in the area. Particularly outstanding, are the Crow Wing Canoe Trail and Crow Wing Wilderness Saddle Trail. The development of campsites and a trail was constructed by eight groups of Neighborhood Youth Corps. Other types of developments, in addition to land conservation and forestry measures, are the Kandiyohi-Wagonga diversion channel; a number of water impoundments for recreation, wildlife and other uses; a wood shaving plant employing 15 people; an alfalfa dehydration plant costing \$300,000 which will provide increased local employment and furnish a market for local alfalfa growers.

Upper Willamette, Oregon

A total of 22 project measures are in various stages of planning, construction or completion. One watershed has been completed under PL 566, one is in progress, and another is in the planning stage. Eight irrigation improvement districts are underway with USDA agencies helping; eight pooling agreements have been completed with ACP and SCS help; a park and recreation facilities in Lane County are underway; a food processing plant is under construction; and youth development projects are being sponsored. The processing plant was located here in anticipation of more intensive use of land for vegetables and small fruits made possible by water management measures under the RC&D Program.

Gwinnett County, Georgia

A total of 16 project measures are underway or completed in this single county RC&D project. Besides the accelerated conservation planning and land treatment, some of the measures include work on a watershed under PL 566; watershed developments in two additional watersheds; recreation, fish, and wildlife enterprises on a fee basis; road bank stabilization; and establishment of new manufacturing industry. These kinds of local activities are expected to stimulate employment and non-farm uses of rural lands near Atlanta.

Northern Rio Grande, New Mexico

A great deal of local activity is taking place in this project with 46 project measures completed or underway. Eleven group irrigation jobs are completed and an additional 15 are in various stages of planning or completion. These involve assistance with ACP, State and local funds and SCS technical help. Other project measures include assistance to the Museum of New Mexico; 65 loans by FHA totaling \$130,000 for such

purposes as fruit storage, home enterprises, manufacture of mining equipment; processing and marketing of fruit and speciality crops; City of Santa Fe park developments; watershed protection; and improvement of rangelands.

Lincoln Hills, Indiana

Scheduled work includes the acceleration of planning and application of conservation practices on cropland, pasture land, woodland, recreation and other lands. Some accomplishments include the completion of three rural water lines with seven more in various stages of completion--all with FHA loan assistance; construction underway on an impoundment under the PL 566 Watershed Program; use of special ACP funds for watershed treatment; planting of over 300,000 trees on critical eroding areas; scenic improvements along highways; incorporation of the arts and crafts industry; formation of a public development corporation; new industry manufacturing a soil conditioner from wood chips. There is much activity in the project area with 34 project measures completed or underway.

Pri-Ru-Ta, Wisconsin

Some special activities include the construction of a dam costing \$350,000 financed by Taylor County to create a lake of 2,800 acres for recreation, fish and wildlife; use of additional ACP funds for pooling agreements for Dewey-Grow agricultural water management; acquiring of five new land levellers with an FHA association loan; construction of dams and improvement of various floways for recreational use; pollution abatement on several areas; forest inventory completed; new lumber and veneer mill (cost \$1,500,000) in adjacent county to provide outlet for logs. A total of 27 project measures have been completed or are underway.

Penn Soil, Pennsylvania

This three county project has a total of 41 project measures completed or underway. About one-half of these are supporting measures in which USDA agencies provide nominal assistance, but all contribute to economic development in the area. Eight watersheds have been completed, are under construction or in the planning stages under PL 566. Excellent progress is being made in planning and conservation land treatment; funds from the Pennsylvania "Project 70" are being used to help with recreational developments; many water developments are underway. For example, the 408-acre Crooked Creek Waterfowl Development and the New Wilmington Water Authority 525-acre impoundment. A woodland utilization study is being made.

Idaho - Washington

The work plan for this 2,243,000 acre project includes 26 project measures for resource improvement and development. Accelerated soil surveys have been initiated and additional technical assistance provided for conservation planning and application of practices. The State Department of Forestry has assigned a forester to the area for assistance to cooperating landowners. Benewah and Kootenai counties have been designated for the Cropland Conversion Program. Preliminary studies have been completed on a proposed dam on Rose Creek, the main purpose of which is flood control and recreation. Nine additional works of improvement are being completed and 10 associated supporting measures are being installed by local sponsors.

Charles Mix-Bon Homme - South Dakota

This project provides for 22 project measures that are being planned for installation. Designs for 11 works of improvement are being prepared and installed. Charles Mix County is designated for the Cropland Conversion Program. Supporting measures include geological survey in Bon Homme county, economic development plan in cooperation with county agents, and sponsorship of the Economic Opportunity Act including applications for assistance.

White River Project Area - Vermont

This project was authorized for operations on December 2, 1964. The work plan includes 21 project measures that are being planned and installed. A soil survey party leader has been assigned and work started in cooperation with Thetford town planning commission. Conservation plans and land use improvements are being planned with cooperating landowners. Seven works of improvement are being designed and installation started. Associated measures include improved farm management, woodland inventory, and recreational areas.

Loans and Related Expense

Loans are available to local sponsoring agencies and groups for project-type activities through the Farmers Home Administration. The future needs for such loans are determined on the basis of local needs and progress of the work. Local sponsors and private landowners are expected to finance most of the work with their own funds. Experiences so far indicate that local sources of financing, and the availability of funds from State and private sources, have substantially reduced prior estimates of local needs for RC&D loans.

Some of the types of project measures and activities scheduled for installation in 1966 and 1967 in the 10 pilot projects are as follows:

Type of project measure or activity	: F.Y. 1966	: F.Y. 1967
A. <u>With Technical Assistance & Services:</u>	:	:
Accelerated soil surveys - additional acres	: 475,000	: 800,000
Accelerated conservation planning - additional cooperators to be assisted	: 1,000	: 1,400
Accelerated land treatment - additional acres (cropland - grassland - recreation - wildlife land)	: 30,000	: 45,000
Accelerated forest land treatment and management - additional acres	: 9,000	: 15,000
B. <u>Resource Conservation and Development - Technical Services and/or Grants and Loans</u>	:	:
Multi-purpose water developments - number	: 50	: 80
Fish and wildlife developments - number	: 45	: 65
Recreation and park area developments (public) - number	: 80	: 120
Recreation and wildlife developments (private) - number]	: 30	: 40
Agricultural water management developments (irrigation & water disposal) - number	: 35	: 40
Land stabilization and critical area treatment systems - number	: 15	: 25
Critical area plantings - acres	: 600	: 1,000
Community range improvement - number of groups	: 6	: 10
C. <u>Other Project Measures to be Carried Out:</u>	:	:
Rural water supply systems - number	: 6	: 14
<u>New</u> wood using industries - number (does not include expansion of present ones)	: 8	: 14
<u>New</u> resource board industries - number	: 30	: 40
<u>New</u> cooperative marketing facilities/association - number	: 10	: 20

Note: Figures do not include any projections for the anticipated additional project areas expected to be planned in 1966 or 1967.

(g) Water Conservation and Utilization Projects

PROJECT STATEMENT
(On the basis of available funds)

Project	: 1965	: 1966	: 1967
	: Estimate	: Estimate	: Estimate
Development of land for irrigation	: - -	: - -	: - -
Unobligated balance available start of year	: -127,413	: -127,413	: -127,413
Unobligated balance available end of year	: 127,413	: 127,413	: 127,413
Total appropriation or estimate	: - -	: - -	: - -

Land development for irrigation and settlement on the Eden Valley Project in Wyoming has been completed in accordance with the project plan prepared cooperatively with the Bureau of Reclamation. The farms developed in the project have been sold with the exception of four. One of these has been transferred to the State of Wyoming as a demonstration farm. The other three tracts were transferred to the Department of the Interior during the fiscal year 1964. The Eden Valley Soil Conservation District provides technical assistance in soil and water conservation to the project settlers. Sufficient funds are available from prior-year unobligated balances to protect the interests of the Government and provide a reserve for adjustments in remaining unpaid obligations if needed. No new appropriation will be required.

PASSENGER MOTOR VEHICLES

The 1967 estimates propose the purchase of 73 additional and 155 replacement passenger motor vehicles.

The passenger motor vehicles of the Soil Conservation Service are distributed among the 51 State and Territorial offices, approximately 300 area offices and various technical specialists located at field headquarters. None of these vehicles are used in Washington, D. C. The vehicles are used in rural or other areas where common carrier facilities are either nonexistent, uneconomical, or inadequate due to the nature of the travel which requires a high degree of mobility, i.e., frequent stops often at places inaccessible by common carrier. Also, two or more persons often are required to travel together, sometimes for long distances, making the use of a pickup or truck type vehicle impractical for such trips. Resident technicians servicing farmers and ranchers in soil conservation districts generally do not use passenger vehicles but travel in pickup trucks to field areas to conduct surveys and prepare conservation plans, perform engineering work or to lay out conservation practices.

Passenger motor vehicles are not assigned to one individual exclusively at locations where more than one employee has need for them. This allows several employees to use a single car and minimizes the number of vehicles and maintenance costs.

Additional passenger motor vehicles: The 1967 estimates provide for the purchase of 73 additional passenger motor vehicles.

Sixty of the additions, which will be sedans, are needed to replace a like number of sedan delivery vehicles (classified as trucks under 12,500 lbs., 4x2). The sedan deliveries to be replaced are used primarily by technical specialists with area or State-wide responsibilities. Average annual use of the vehicles exceeds 10,000 miles, a high percent of which is over improved roads. Tools and equipment used by these personnel can be transported equally as well in a sedan as a sedan delivery.

Based on comparable use, the replacement of 60 sedan deliveries with sedans will result in an estimated annual savings of more than \$6,000. This is based on Service cost data records which indicate that sedans, when used as described above, have an operation cost of about 1¢ per mile less than the cost of sedan deliveries with comparable use.

Sedan deliveries proposed to be replaced with sedans will have passed the minimum replacement standards established by the General Services Administration for this type vehicle, or will be beyond economical repair due to accident or other causes.

The seventy-three additional vehicles are needed by programs as follows:

Conservation Operations - Fifty additional vehicles are needed as replacements for sedan deliveries.

Watershed Planning - Four additional vehicles are needed as replacements for sedan deliveries.

Watershed Protection - Five additional vehicles are needed as replacements for sedan deliveries. Twelve additional vehicles will be needed to provide transportation for river basin survey coordinators and survey staff members in four basins where type IV surveys are proposed for initiation in 1967, in three regions where type I comprehensive surveys are proposed for initiation in 1967, and in the study of the North Atlantic Region, initiated in the fiscal year 1966. One additional vehicle is needed to provide transportation for survey coordinators and survey staff members in the Appalachian Water Resources Survey already in progress.

Flood Prevention - One additional vehicle is needed as replacement for a sedan delivery.

Replacement of passenger motor vehicles: The estimates for 1967 provide for the scheduled replacement of 155 passenger motor vehicles during the fiscal year. The vehicles proposed to be replaced will have passed the minimum replacement standards of 60,000 miles or 6 years of age established by the General Services Administration or will be beyond economical repair due to accident or other causes.

Efforts by the Service to carry out a sound replacement schedule have been effective. The Service will replace about 160 vehicles during the fiscal year 1966, and the 155 replacements estimated for 1967 will enable replacement of all passenger vehicles in the Service over 7 years of age or 70,000 miles. Actual replacements, however, will be based on economy of operation and expected use factors, as well as age and mileage.

All replacement passenger sedans will be of the "Other sedans" class.

The following table indicates the use and number of passenger motor vehicles proposed for purchase and replacement during fiscal year 1967:

Activity and Use	Vehicles	
	Proposed	Scheduled
	Additional Purchases	for Replacement
<u>Conservation Operations</u> - For use by Area Conservation-		
ists, technical specialists, survey supervisors, and		
State Office personnel	50	126
<u>Watershed Planning</u> - For use by Watershed Planning		
Party Leaders and technical specialists assisting		
local sponsors prepare watershed work plans	4	10
<u>Watershed Protection</u> - For use by Assistant State Con-		
servationists for watersheds and technical special-		
ists; supervising installation of works of improvement		
in authorized projects; negotiating with local		
sponsors; and conducting river basin surveys and		
investigations	18	13
<u>Flood Prevention</u> - For use by technicians and aids in		
planning and installing works of improvement in the		
10 uncompleted authorized projects	1	6
<u>Great Plains</u> - For use by Assistant State Conservation-		
ists in supervising and inspecting activities under		
the Great Plains Conservation Program	0	0
<u>Resource Conservation and Development</u> - For use by		
Project Coordinators and project staff members assist-		
ing local sponsors prepare work plans and carry out		
planned resource conservation and development work in		
coordination with going programs in approved project		
areas	0	0
Total	73	155

The Soil Conservation Service had 892 passenger motor vehicles on June 30, 1965. Age and mileage data for these vehicles are as follows:

Age Data			Mileage Data		
Year	Number of	Percent	Lifetime	Number of	Percent
Model	Vehicles	of Total	Mileage	Vehicles	of Total
			(Thousands)		
1957	9	1.0	Over 100	4	0.5
1958	46	5.2	80-100	35	3.9
1959	25	2.8	60-80	127	14.2
1960	65	7.3	50-60	121	13.6
1961	114	12.8	40-50	102	11.4
1962	159	17.8	30-40	130	14.6
1963	198	22.2	20-30	126	14.1
1964	152	17.0	10-20	117	13.1
1965	124	13.9	1-10	100	11.2
Totals	892	100.0	Under 1	30	3.4
			Totals	892	100.0

